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Characteristics of Sustainable Brownfields Projects



Task 1 Report

**Sustainable Redevelopment
Linking the Community and Business for a Brighter Future**

Characteristics of Sustainable Brownfields Projects

TASK 1 REPORT

July, 1998

Prepared for:

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Executive Summary

The industrial explosion and economic market cycles that our nation has experienced during the twentieth century have combined to produce one of the healthiest and most prosperous societies in the world today. However, this growth has left behind a legacy of abandoned or underutilized industrial and commercial properties across the country that have an assortment of real or perceived chemical contamination problems. These properties have come to be known as “Brownfields.”

“By working to transform Brownfields into hubs of economic activity, we create jobs, new revenue and new opportunity. These partnerships bring together government, business, and community leaders and citizens to guarantee stronger and healthier neighborhoods for the 21st century - places where our children can grow, our families can thrive and the economy is sure to prosper.”

- Vice President Gore, 1998

The challenge put before us by the Vice President demands new approaches, innovative ideas, commitments and cooperation, and a common vision that are tailored to each community's or neighborhood's unique qualities. The short-term “use-it-and-leave-it” and “quick-fix” approaches to development can no longer be tolerated. Communities, both urban and rural, need to make significant advances toward sustainability by reusing these Brownfields assets, and developing processes that help prevent the creation of more Brownfields

over the coming decades. The question then becomes, what exactly is sustainable and how does it relate to the redevelopment of Brownfields?

There are three bodies of literature that are quickly growing in their scope and content – sustainability, sustainable development, and Brownfields redevelopment. However, information that associates the broad-scale, abstract nature of sustainability and sustainable development with the program - or project-level precision required for Brownfields redevelopment efforts is somewhat limited.

The purpose of this study therefore, is to provide information to assist and guide communities, municipalities and other government organizations in the planning and implementation of sustainable Brownfields redevelopment. The results of the study will also assist the U.S. Environmental Protection Agency (EPA) in evaluating the various approaches being taken by communities in order to refine or develop new policies and technical tools that may be needed.

As discussed in Chapter One, this study has been organized into two tasks. The objectives of Task 1 are to explain the broad concepts of sustainability and sustainable development; to distill them down and associate them with the Brownfields redevelopment process. This will enable the study to establish those desirable qualities which must be considered by the practitioners at the operational level who are charged with implementing sustainable Brownfields redevelopment programs and projects. This has been accomplished by researching a variety of data sources in order to identify, define, and verify the parameters, elements, and characteristics (PECs) associated with both sustainability and Brownfields redevelopment. Task 2 will use these parameters, elements, and characteristics to construct qualitative model frameworks for successfully implementing sustainable Brownfields redevelopment in urban and

rural settings. This report presents the findings of Task 1 exploratory research only.

Chapter Two describes the exploratory research methods and descriptive analysis used to describe the PECs, to determine why these factors are important, to explain how they support the basic theory that sustainable Brownfields redevelopment is necessary for success, and to discuss what factors inhibit sustainable Brownfields redevelopment. These factors are then verified by association with existing projects in order to validate, to a somewhat further degree, the basic theory or corollaries to it.

A variety of primary and secondary data sources were employed in the study. These include literature and database searches, a detailed review of a representative set of EPA Pilot Projects, structured interviews with EPA and other Federal agency officials involved with Brownfields redevelopment activities, and personal interviews with local officials and on-site representatives involved with Brownfields efforts in Cape Charles/ Northampton County, VA; Boston, MA; Chattanooga, TN; New Orleans, LA; and, the State of Rhode Island in Providence, RI.

A summary of the study's research and data collection is presented in Chapter Three. Essentially, the research found that despite the growing use of the terms "sustainability" and "sustainable development," their interpretation may mean many different things to many different people. Therefore, these concepts were examined by analyzing the definition of sustainability as a normative process, as an evolutionary process, as context dependent, as it applies to development and self-sustainability, and as applied to the challenges to sustainability. The study further identifies fundamental premises and parameters of sustainability across the range from global or theoretical, to the community level, and for the

Brownfields redevelopment process at the project level. The following represents a summary of these fundamental premises.

- The determination of what is ultimately sustainable is not based on a set of fixed criteria, but will reflect the changing attitudes and values of the individual community as a whole.
- Because the general principles of sustainability and sustainable development are not clearly understood, community outreach, education, and collaboration are critical.
- Achieving sustainable development at the community and Brownfields project levels will require changes in the way communities are planned to create new linkages and balance among the parameters of sustainability.
- The Brownfields redevelopment process must be a grass-roots process, rather than a top-down oriented process, because what is sustainable in one community may not be in another.
- Sustainable redevelopment should be concentrated on the broadest range of issues that may affect current and future site conditions.
- Sustainability of the Brownfields redevelopment process is not dependent upon an outcome, but on the manner in which the community responds to its economic and social needs – as well as the ecological issues.
- The risks associated with Brownfields can be accommodated and redevelopment sustained if the uncertainties are defined and mitigated.

The three fundamental parameters of sustainability – ecological, economic, and social sustainability are identified and described as they relate to development on the community and project levels. Also included is a summary of the data that illustrates the various perceptions and understandings of what the sustainability and Brownfields redevelopment processes are according to those people interviewed. Based on literature research and the range of responses, a working definition of sustainable Brownfields redevelopment is established. For the purpose of this study, sustainable Brownfields redevelopment refers to redevelopment and growth that are maintained over the long-term and occur within the limits of the environment so that the current needs of the citizens are met without compromising the ability of future generations to meet their needs.

The information collected during the exploratory phase of this study forms the basis for the development of the key elements and their characteristics that are associated with sustainable Brownfields redevelopment. Chapter Four presents the analytical results in which ten key elements associated with sustainable Brownfields redevelopment are identified and described in detail. These elements, and their relationship to the Brownfields process, are summarized in Table ES-1.

Although the elements defined are common to the Brownfields process, they should not be considered as requirements for all projects. Depending on the nature of the site, scope of the project, and desires of the community, only some of these elements may apply. Likewise, the listing is not all inclusive. New elements may be defined as experience in developing Brownfields grows and the time period over which these projects can be monitored and evaluated is extended.

Table ES-1: Summary of Key Elements Associated with Sustainable Brownfields Redevelopment

Elements	Effect on Sustainable Brownfields Redevelopment
Community Profiling	Sets the foundation for all community decisions and future growth
Comprehensive Community Planning	Involves, integrates, and commits community participants and stakeholders to common vision and goals
Organizational Focus and Structure	Integrates the program into the political and administrative workings of local government
Site Identification and Characterization	Reduces the risks which influence remediation, financing, marketing, redevelopment, and regulatory strategies
Risk Management and Restoration	Addresses the fears and misconceptions associated with redevelopment by clarifying uncertainties and balancing benefits with costs
Legal/Regulatory Issues	Prescribes requirements for property transfer and utilization, as well as liability of owners, operators, lenders, buyers, and municipal government
Site Marketing and Redevelopment	Highlights the importance of balancing economic, social and ecological factors of land use with focus on community needs and future generations
Technology Applications	Increases cost benefits and quality of life as new technologies are identified, developed and integrated
Project Funding and Finance	Provides the fiscal basis to initiate programs/projects and ensure their continued operation until market forces take over
Environmental Justice	Ensures environmental equity, equitable costs and equitable benefits for the community and stakeholders

The analysis also considers the factors of sustainability and sustainable development, as well as the specific activities involved in the Brownfields redevelopment process at the local level, in order to derive and describe the various characteristics that are associated with the above elements, how these characteristics have been applied - successfully and unsuccessfully in various situations or scenarios, and what barriers may exist with their implementation. These characteristics are highlighted in Table ES-2 and discussed in Chapter Four.

**Table ES-2: Characteristics of Elements Associated with Sustainable Brownfields
Redevelopment**

Elements	Characteristics
Community Profiling	<ul style="list-style-type: none"> • Develop environmental baseline inventory for future ecosystem management • Estimate natural resource consumption limits • Incorporate important landscape and attractive community features • Associate ecological assets with community values • Define the composition and character of the community • Understand the socio-cultural influences and needs that promote stability • Preserve natural, cultural, and historic resources for inter-generational continuity • Develop a sense of community self-reliance • Determine the economic basis of the community and climate for investment • Recognize the skills and knowledge of the community labor force
Comprehensive Community Planning	<ul style="list-style-type: none"> • Develop private-public partnership • Incorporate community concerns into the decision-making processes • Integrate the regional ecosystem(s) perspective • Include “Best Practices” for sustainability <ul style="list-style-type: none"> ✓ Develop a comprehensive approach to all concerns ✓ Identify the carrying capacity of the ecosystem ✓ Establish urban growth boundaries ✓ Determine current and planned surrounding land use ✓ Promote the potential benefits for minimizing automobile use ✓ Determine economic self-sufficiency ✓ Depend on community-stakeholders’ consensus ✓ Identify uncertainties and build-in flexibility in planning options ✓ Equalize benefits and burdens for the community and stakeholders
Organizational Focus and Structure	<ul style="list-style-type: none"> • Emphasize need for strong community and public leadership • Include all project stakeholders and concerned or interested citizens • Centralize local government coordination, point-of-contact, and authority • Integrate all public and private resources
Site Identification and Characterization	<ul style="list-style-type: none"> • Determine which party is best to initiate and perform the site characterization • Obtain accurate ecological information <ul style="list-style-type: none"> ✓ Delineation of site characteristics ✓ Representation of nature of contamination ✓ Site assessments ✓ Integration of assessments, audits and inspections ✓ Identification of groundwater contamination ✓ Create continuous updating procedure ✓ Use of technical resources available • Assess the redevelopment potential of the site <ul style="list-style-type: none"> ✓ Adjacent land owners and uses ✓ Cooperation of the owner ✓ Cost of remediation ✓ Socioeconomic conditions of the community ✓ Transportation and infrastructure ✓ Attractive natural or historic features ✓ Current economic conditions • Illustrate the basis of prioritizing the site over other candidate sites <ul style="list-style-type: none"> ✓ Site prioritization schemes ✓ Multi-level screening process/prioritization model

Table ES-2: Characteristics of Elements Associated with Sustainable Brownfields Redevelopment (Continued)

Elements	Characteristics
Risk Management and Restoration	<ul style="list-style-type: none"> • Identify and clarify the barriers to effective risk management <ul style="list-style-type: none"> ✓ Lack of communication and coordination with stake holders ✓ Reluctant or hesitant stakeholders ✓ Community priorities and objectives ✓ Incomplete or inaccurate site characterization ✓ Threat of contamination spread ✓ Long-term remedial approaches ✓ Government policy and requirement changes ✓ Loss of market opportunity window ✓ Contingent risks of owners/developers • Address the community concerns <ul style="list-style-type: none"> ✓ Relate scientific results and risks to community understanding ✓ Inform the public of issues critical to their interests ✓ Empower the public to act with respect to the risk communicated • Address the project participant concerns <ul style="list-style-type: none"> ✓ Reluctance to participate and liability indemnification for current owner ✓ Return on investment and risk factors/perception for buyer & developer ✓ Borrower circumstances and property value maintenance for lender • Identify the tools for Risk Management <ul style="list-style-type: none"> ✓ Project organizing ✓ Federal and State agency roles ✓ Use risk based corrective actions based on future uses ✓ Identify property ownership alternatives ✓ Apply institutional controls and insurance
Legal/Regulatory Issues	<ul style="list-style-type: none"> • CERCLA <ul style="list-style-type: none"> ✓ “Joint and Several Liability” ✓ SARA, 1986 ✓ EPA Guidance, 1992 “Covenant not to Sue” “Prospective Purchase Agreements” ✓ CERCLA Amendment, 1996 “Comfort Letter Policy” “Secured Lenders and Fiduciaries” protections • RCRA, Clean Air Act, Clean Water Act, Toxic Substances Control Act, etc.
Site Marketing and Redevelopment	<ul style="list-style-type: none"> • Promote program factors <ul style="list-style-type: none"> ✓ Community expectations ✓ Rationality and incentives ✓ Ownership ✓ Program life cycle ✓ Control of development • Promote ecological factors <ul style="list-style-type: none"> ✓ Eco-Industrial parks ✓ Reclaimed Brownfields for parks and open spaces ✓ Green space and open space as interim use ✓ Reclaimed Brownfields in ecologically sensitive areas ✓ Landscape design considerations • Promote socioeconomic factors <ul style="list-style-type: none"> ✓ The right property ✓ The right use ✓ The right incentives • Site Marketing <ul style="list-style-type: none"> ✓ Sites as community assets ✓ Role of prevailing market forces ✓ Market or feasibility analyses

Table ES-2: Characteristics of Elements Associated with Sustainable Brownfields Redevelopment (continued)

Elements	Characteristics
Technology Applications	<ul style="list-style-type: none"> • Energy Technology <ul style="list-style-type: none"> ✓ Reducing energy demands ✓ Renewable energy • Environmental Technology <ul style="list-style-type: none"> ✓ Industrial Ecology ✓ Eco-Industrial parks ✓ Pollution prevention and waste minimization ✓ Site assessments and remediation ✓ Ecological monitoring and assessment • Transportation Technology <ul style="list-style-type: none"> ✓ Intelligent Transportation Systems (ITS) ✓ Alternative fuels and vehicles • Telecom/Information Technology <ul style="list-style-type: none"> ✓ Geographic Information System (GIS) • Public Safety Technology
Project Funding/Finance	<ul style="list-style-type: none"> • Redevelopment processes requiring funding <ul style="list-style-type: none"> ✓ Site characterization and remediation ✓ Planning, public outreach and design approval ✓ Development and reconstruction ✓ Long term operational support • Public Sources of funds, primarily for the initial stages of the project <ul style="list-style-type: none"> ✓ Federal – EPA, HUD, DOT, DOC, SBA ✓ State – environmental or economic agencies, tax programs, loans ✓ Local – incentive programs, tax increment financing programs, grants • Private Sources of funds <ul style="list-style-type: none"> ✓ Property owners or other responsible parties ✓ Prospective purchasers or developers ✓ Equity investors ✓ Commercial banks ✓ Private foundations and universities
Environmental Justice	<ul style="list-style-type: none"> • Early, adequate and meaningful community involvement in decision making • Stakeholders who are committed to effecting a change for the better • Equal access to all information relating to the redevelopment • Willingness to negotiate to achieve a win-win situation • Environmental equity, equitable costs and equitable benefits for all

Further, throughout the discussion of these elements and characteristics, distinctions have been pointed out regarding their application to urban and rural projects. In general, all the parameters and elements apply to both urban and rural projects. However, significant differences occur between these two types of projects with respect to which characteristics may apply and to what degree.

Because of the limitations inherent to this study (discussed in Section 2.3), and because the primary sources of data are based on individual perspectives, opinions, and experiences, every effort was made during the site visits to verify the elements and characteristics collected with at least more than one other source. In addition, eight municipal Brownfields coordinators were queried about the key elements and applicability of the characteristics.

All eight municipalities confirmed the importance and applicability of the ten key elements, although the actual degree to which the elements apply varies in relative importance on a site-by-site basis. The respondents also provided descriptions and explanations of many of their processes, some of which are common to all Brownfields projects. However, some of these descriptions also reflect unique approaches to addressing some of the key characteristics of sustainability associated with Brownfields. Table ES-3 below summarizes the key elements and those additional characteristics verified through the municipality interviews.

TABLE ES-3: SUMMARY OF CHARACTERISTICS VERIFIED BY MUNICIPALITIES	
	Community Profiling
	<ul style="list-style-type: none"> • Community vision is more critical than historical information
	<ul style="list-style-type: none"> • Market analysis is a key component
	<ul style="list-style-type: none"> • Ecological baseline data not as relevant to urban/suburban communities as it is to rural
	Comprehensive Community Planning
	<ul style="list-style-type: none"> • The variety of plans need to be integrated so their components support each other and make sense for the community
	<ul style="list-style-type: none"> • A mechanism or strategy for continual or periodic updating should be included
	Organizational Focus and Structure

	<ul style="list-style-type: none"> • Brownfields are best addressed by the local economic development and planning departments with environmental functions
	<ul style="list-style-type: none"> • All business loans, grants, municipal funding, and financial partnerships should be coordinated through the same point-of-contact
	<ul style="list-style-type: none"> • Technical, legal and financial expertise should be integrated into the local organization to retain responsibility, credibility and ownership of decisions and outcomes
	<ul style="list-style-type: none"> • Close collaboration with State and Federal regulatory officials is critical to timely and flexible interpretation of project requirements
	<ul style="list-style-type: none"> • Academic institution resources are cost effective, able to provide unique technical support, and provide on-the-job training opportunities to students
	Site Identification, Characterization & Prioritization
	<ul style="list-style-type: none"> • Sites that have existing end-users or potential developers should be a prime focus
	<ul style="list-style-type: none"> • Regional prioritization of sites not feasible where crossing of political jurisdictions is involved – unless respective jurisdictions participate and support the process
	<ul style="list-style-type: none"> • Legislative incentives to entice private property owners to participate – especially non-local owners – are needed
	<ul style="list-style-type: none"> • All project information should be centrally available for quick and reliable access
	Risk Management and Remediation
	<ul style="list-style-type: none"> • State legislation that deals with clean-up levels and release from liability is critical
	<ul style="list-style-type: none"> • Deed restrictions and environmental covenants are effective institutional controls at local level
	<ul style="list-style-type: none"> • Community involvement should be managed so the community does not use the vector of potential health risk to force greater demands on owner/potential developer than are economically feasible
	<ul style="list-style-type: none"> • Extended timeframes for Brownfields redevelopment pose greater financial risk to rural communities dependant on short-term grants or limited funding capabilities
	<ul style="list-style-type: none"> • Caution should be used to avoid increasing community optimism that the project will create jobs – especially when fewer jobs, different skill level jobs, or long delays in the project may occur
	<ul style="list-style-type: none"> • Environmental liability insurance is an increasingly feasible tool to manage risk
	Legal/Regulatory Issues
	<ul style="list-style-type: none"> • Mechanisms for municipal liability release are needed especially for municipalities forced to assume ownership due to foreclosure, abandonment, or eminent domain
	<ul style="list-style-type: none"> • Less stringent liability and more flexibility is needed for Brownfields which are generally a less serious health threat than Superfund sites

	Site Redevelopment and Marketing
	<ul style="list-style-type: none"> • Development or redevelopment follows certainty in the economic marketplace
	<ul style="list-style-type: none"> • Market demands can pose greater barriers than availability of project funding
	<ul style="list-style-type: none"> • Organized marketing programs in rural communities are not sustainable without long-term grants
	<ul style="list-style-type: none"> • Brownfields properties should not be marketed or advertised as “Brownfields”
	<ul style="list-style-type: none"> • Building on historical and natural resources develops permanence and continuity of development among generations
	Technology Applications
	<ul style="list-style-type: none"> • Community needs to identify and trust proprietary remediation technologies
	<ul style="list-style-type: none"> • Transportation infrastructure needs to be tailored to meet changing land uses and to provide better public amenities
	Funding/Financing
	<ul style="list-style-type: none"> • Best to integrate assessment and clean-up costs into overall redevelopment financing plan
	<ul style="list-style-type: none"> • Lack of certainty in cost of remediation important barrier or risk
	<ul style="list-style-type: none"> • Cost/benefit models are very complicated and only useful if they are designed for site-specific conditions or situations
	<ul style="list-style-type: none"> • Ultimately, private financing based on market driven economy will sustain process
	<ul style="list-style-type: none"> • Resale value of the property after clean-up is generally less in rural areas than the cost of clean-up and regional market values
	<ul style="list-style-type: none"> • Rural communities need financial assistance with infrastructure installation in order to promote redevelopment of sites
	Environmental Justice
	<ul style="list-style-type: none"> • The biggest problem is lack of understanding about what environmental justice means
	<ul style="list-style-type: none"> • The emphasis should be on addressing the community’s overall needs

In conclusion, this Task 1 report presents the parameters, elements, and characteristics that are qualitatively associated with sustainable Brownfields redevelopment projects. Through extensive research, the study establishes a working definition of sustainable Brownfields redevelopment and examines the abstract concepts of sustainability and sustainable development. This is done to

operationalize these concepts at the project level. By associating the fundamental premises and parameters of sustainability with the detailed characteristics of a Brownfields redevelopment process, a series of key elements and their respective characteristics have been identified, defined and verified. These parameters, elements and characteristics will be organized, and various relationships established, in the subsequent phase of the study, in order to construct model frameworks of successful and sustainable Brownfields redevelopment.

Table of Contents

Executive Summary.....	i
Table of Contents.....	xiv
List of Appendices	xvi
List of Figures	xvii
 1.0 Introduction	 1
1.1 Purpose and Scope.....	1
1.2 General Overview of the Brownfields Initiative.....	2
 2.0 Analytical Approach	 7
2.1 Method of Analysis	7
2.2 Description of Analyses Performed	9
2.2.1 Primary Data Sources.....	10
2.2.2 Secondary Data Sources	11
2.2.3 Pilot Project Case Studies	11
2.3 Analytical Limitations and Controlling Assumptions	13
 3.0 Summary of Data Sources	 17
3.1 Overview of the Sustainable Development Concept	19
3.1.1 Definition of Sustainability.....	21
3.1.2 Sustainability at the Community Level.....	33
3.1.3 Sustainability at the Project Level.....	47
3.2 Overview of the Brownfields Redevelopment Process.....	51
3.2.1 Secondary Data Sources – Literature and Database Review.....	51
3.2.2 Primary Data Sources – Structured Interviews with EPA and other Federal Agencies	66
3.2.3 Primary Data Sources – Structured Interviews with On-Site Municipal Officials and Project Stakeholders	70

3.2.4 Brownfields Pilot Project Case Analysis.....	84
4.0 Analytical Results.....	101
4.1 Parameters, Elements and Characteristics of Sustainable Brownfields Redevelopment	101
4.1.1 Community Profile	102
4.1.2 Comprehensive Community Plan	108
4.1.3 Organizational Focus and Structure of the Brownfields Program.....	120
4.1.4 Brownfields Site Identification, Characterization, and Prioritization	127
4.1.5 Risk Management and Site Restoration.....	139
4.1.6 Legal/Regulatory Issues	154
4.1.7 Site Marketing and Redevelopment Approach	161
4.1.8 Technology Applications.....	174
4.1.9 Project Funding/Finance.....	183
4.1.10 Environmental Justice.....	192
4.2 Verification of Identified PECs.....	196
5.0 Conclusion	207
References	I
Appendix A	A-1
Appendix B	B-1
Appendix C	C-1
Appendix D	D-1
Appendix E	E-1
Appendix F	F-1
Appendix G	G-1

APPENDICES

Appendix A	List of Acronyms
Appendix B	Glossary of Terms
Appendix C	Summary of Brownfields Pilot Projects Analyzed
Appendix D	Summary of Program Information Sources
Appendix E	Summary of EPA and Federal Agency Interviews
Appendix F	Summary of On-Site Interviews
Appendix G	Local Contacts for Brownfields Projects Cited in this Report

List of Figures and Tables

ES-1 Summary of Key Elements Associated with Sustainable Brownfields Redevelopment

ES-2 Characteristics of Elements Associated with Sustainable Brownfields Redevelopment

ES-3 Summary of Characteristics Verified by Municipalities

2.1 Basic Theory Testing Approach

2.2 Conceptual Model Framework for Sustainable Brownfields Redevelopment

3.1 Principles of Ecosystem Management

4.1 Typical Stakeholder Configuration for a Brownfields Redevelopment Program

4.2 Matrix Characterization of Brownfields Sites

4.3 Evolution of Brownfields Environmental Liability

4.4 Summary of Characteristics Verified by Municipalities

5.1 Key Elements Associated with Sustainable Brownfields Redevelopment

5.2 Characteristics Associated with Elements of Sustainable Brownfields Redevelopment

INTRODUCTION	
➤	Purpose and Scope
➤	General Overview

1.0 Introduction

The factors upon which the long-term viability of redeveloped Brownfields depend have neither been adequately defined nor quantified in model frameworks that can be used by the U.S. Environmental Protection Agency (EPA) to assess and support the sustainability of Brownfields environmental restoration and socioeconomic development. In addition, the concepts of sustainability and sustainable development are not fully understood by the general public – especially with regard to their application to community development and economic growth.

1.1 Purpose and Scope

The overall purpose of this project is to provide information to assist and guide communities, municipalities and other government structures in the planning and implementation of sustainable Brownfields redevelopment. This study will also provide the EPA with model frameworks for the evaluation of Pilot program results and predictive criteria for the success of sustainable Brownfields Pilot Projects.

For the purpose of this study, a sustainable Brownfields project is defined as one in which redevelopment and growth are maintained over the long-term and occur within the limits of the environment so that the current needs of the citizens are met without compromising the ability of future generations to meet their needs. This study explains the derivation of this definition from the

theoretical concepts of sustainability and sustainable development, to how they are applied on an operational level.

This study has been organized into two tasks. The objective of Task 1 is to identify, define, verify, and quantify, if possible, the parameters, elements, and characteristics that are indicative of successful and unsuccessful Brownfields sustainable redevelopment. Task 2 involves using those parameters, characteristics and elements to create the links or relationships needed to build model frameworks that can be used by the EPA to evaluate and support potential scenarios for Brownfields cleanup, environmental restoration, and redevelopment. Where the data allows, model frameworks for Brownfields redevelopment in an urban and rural setting will be developed. This report presents the findings of Task 1 research only.

The remainder of this chapter establishes the context for the report by presenting an overview of the Brownfields initiative and EPA Pilot Projects, which were central to this study. Chapter 2.0 describes the analytical approach used to obtain and verify the data, and the assumptions inherent to the study approach. Chapter 3.0 presents a summary of the findings of the research into the concepts of sustainability and the Brownfields redevelopment process. Chapter 4.0 explains the parameters, elements and characteristics of sustainable Brownfields redevelopment that have been identified through the research and discusses the results of their verification. Chapter 5.0 summarizes the general premises, elements, and characteristics that are recommended to promote the success of sustainable Brownfields redevelopment.

1.2 General Overview of the Brownfields Initiative

The dynamics of an industrial economy, and even information and service-based economies, produce cycles of business expansion, stagnation, and decay. In

industrial based economies, at the lowest phase of these cycles, facilities that once housed vibrant manufacturing activities are often abandoned leaving dormant, contaminated sites.

A report by the U.S General Accounting Office (GAO, 1987) estimated as many as 425,000 former industrial and commercial sites potentially containing hazardous waste may exist throughout the nation. To date, most of these abandoned or underutilized facilities have been in the more populous urban areas. Subsequent shifts of resources such as industries, wealth, levels of knowledge, technical expertise, and creativity out of these urban areas have been identified as the root cause for environmental degradation and loss of economic viability, all of which impact negatively on the quality of human life. Efforts by the EPA and the states to investigate these sites indicated that either many were only perceived as being contaminated based on prior use, or had insufficient levels of contamination to require a CERCLA (Comprehensive Emergency Response, Compensation, and Liability Act of 1980; generally referred to as “Superfund”) response action. Unlike the undeveloped greenspaces that are highly viable for economic development, these sites have become known as “Brownfields,” and are viewed by many community residents as liabilities and a hindrance to development.

The EPA defines Brownfields as “abandoned, idled, or underused industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination” (Fields, 1995). For the purposes of this study, Brownfields are further defined as those sites containing chemical contamination subject to CERCLA. Under current Federal legislation, only the worst of these sites qualify for Federally-funded remediation. The challenge to the EPA, states, and local communities is how to ensure the public health and the environment can be protected while placing the majority of these remaining sites back into productive use for economic development by local communities.

The question that needs to be asked is, “How can these properties be converted from local liabilities into lasting community assets?”

On January 25, 1995, EPA Administrator Carol Browner announced the “Brownfields Action Agenda” that outlined the Agency’s activities and plans to help communities implement and realize the potential value and benefits of Brownfields sites to economic redevelopment. The EPA recognized that Brownfields cleanup and redevelopment involve a different paradigm from existing environmental compliance programs and addressing these sites raises cross-cutting issues that involve a wide variety of organizations, programs, and resources. The principle objectives of the Brownfields initiative are to encourage assessment, environmental cleanup and restoration, and economic redevelopment of those sections of our nation most devastated by the decay and associated economic losses caused by Brownfields, and to rectify concomitant environmental inequalities and human health impacts that have evolved.

Brownfields Action Agenda – General Policy Areas
✓ Brownfields Pilot Program Grants
✓ Clarification of Liability and Cleanup Issues
✓ Partnerships and Outreach
✓ Job Development and Training

The efforts outlined in the Brownfields Action Agenda were designed to help identify and clarify approaches to these objectives by focusing on four general policy areas.

Brownfields Pilot Project Grants – designed to develop and test redevelopment models, direct efforts toward removing regulatory barriers, and to facilitate coordination among public and private organizations at the Federal, state, and local levels.

Clarification of Liability and Cleanup Issues – intended to clearly state EPA’s decision when to use its enforcement discretion, and to collaborate with states and localities to develop and issue guidance regarding liability associated with these sites.

Partnerships and Outreach - committed EPA to building partnerships with Federal, state and local representatives of organizations in order to develop strategies for promoting public participation and community involvement in Brownfields decision-making.

Job Development and Training – geared toward fostering workforce development through environmental education programs, recruiting students from disadvantaged communities, providing worker training, and creating job opportunities for local residents near Brownfields sites.

Concurrent with implementation of the Brownfields Action Agenda, two other key initiatives and campaigns were rapidly developing that spurred new ideas and approaches directly related to Brownfields economic redevelopment. These were the United Nations Agenda 21, a global action plan for sustainable development, and President Clinton’s Community Empowerment Agenda, that established the National Urban Policy to promote sustained national economic growth. These national and international initiatives are promoting the development of an all-encompassing framework of values, policies, and processes to help guide communities in their Brownfields redevelopment and community revitalization efforts.

The EPA’s Brownfields Economic Redevelopment Initiative, as outlined in the Brownfields Action Agenda, is designed to assist states, communities, and other organizations or individuals in assessing, cleaning up, sustainably reusing and preventing future Brownfields. The EPA recognizes that a major impediment to

enduring environmental and economic health is the inability to achieve sustainable redevelopment. Therefore, the ultimate success of the Brownfields initiative is contingent upon a project's ability to stimulate sustainable environmental restoration and economic development.

As part of the national Brownfields initiative, the EPA has “awarded cooperative agreements to states, cities, towns, counties, and tribes to demonstrate Pilots that test Brownfields assessment models, direct special efforts toward removing regulatory barriers without sacrificing protectiveness, and facilitate coordinated public and private efforts at the Federal, state and local levels” (USEPA, 1996(a)). These Pilot Project grants are intended to be a catalyst to the sustainable redevelopment of Brownfields sites. This is accomplished by providing public funds to stimulate local government organizations into creating the impetus and maintaining control of the project process and outcomes, providing technical support during the early stages of a project, and inducing private capital investment. By addressing these crucial needs through a series of demonstration Pilot Projects, the agency is striving to develop the knowledge, experience, and public confidence required for continued implementation of future Brownfields projects at the local community level.

2.0 Analytical Approach

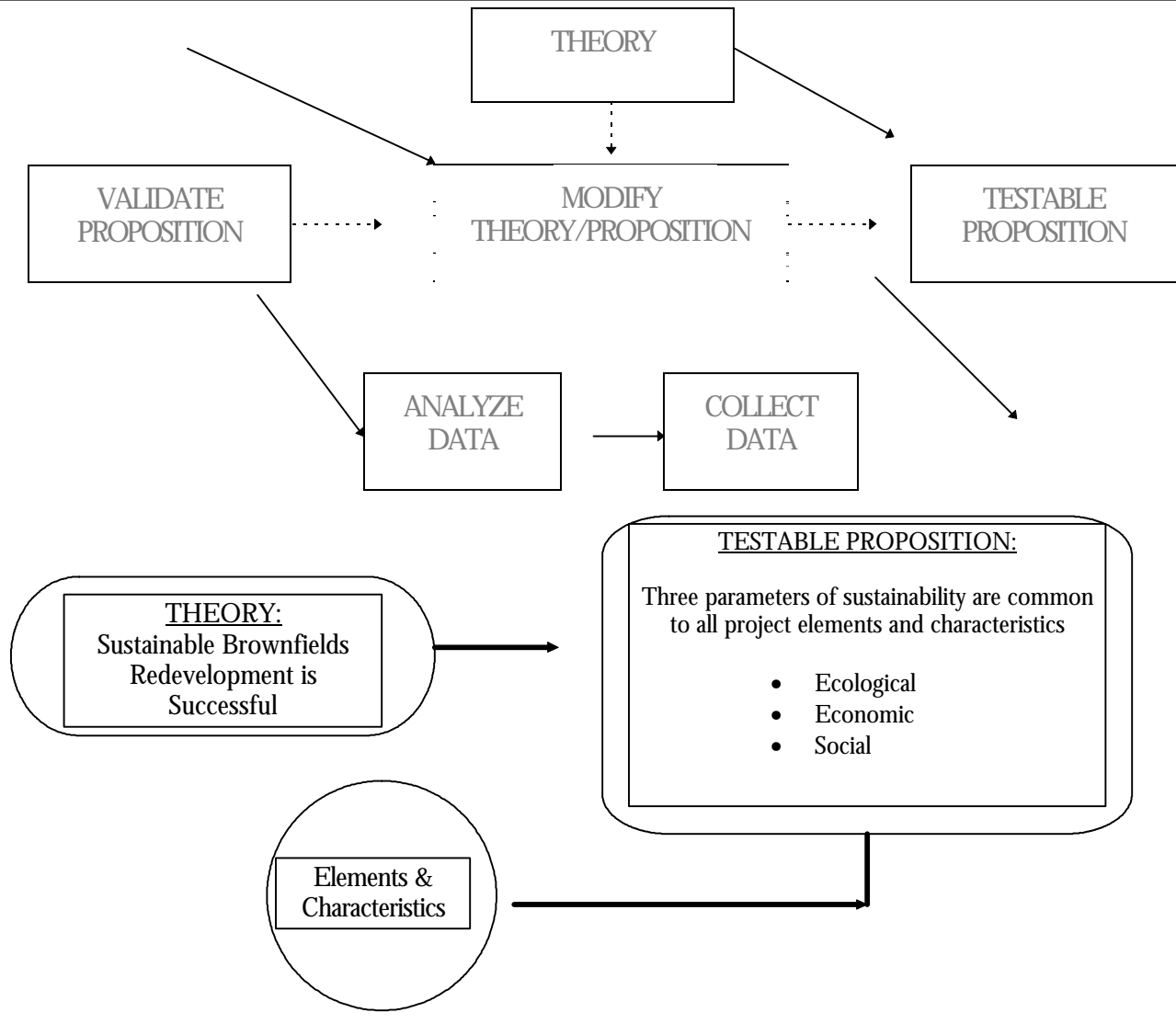
ANALYTICAL APPROACH	
➤	Method of Analysis
➤	Description of Analysis
➤	Analytical Limitations

This study is designed to analytically construct a conceptual model framework for sustainable Brownfields redevelopment projects. This first phase, or Task 1, uses a series of data sources to clarify key concepts such as sustainability and sustainable development, and to identify the parameters, elements and characteristics (PECs) indicative of sustainable, urban and rural Brownfields redevelopment projects.

2.1 Method of Analysis

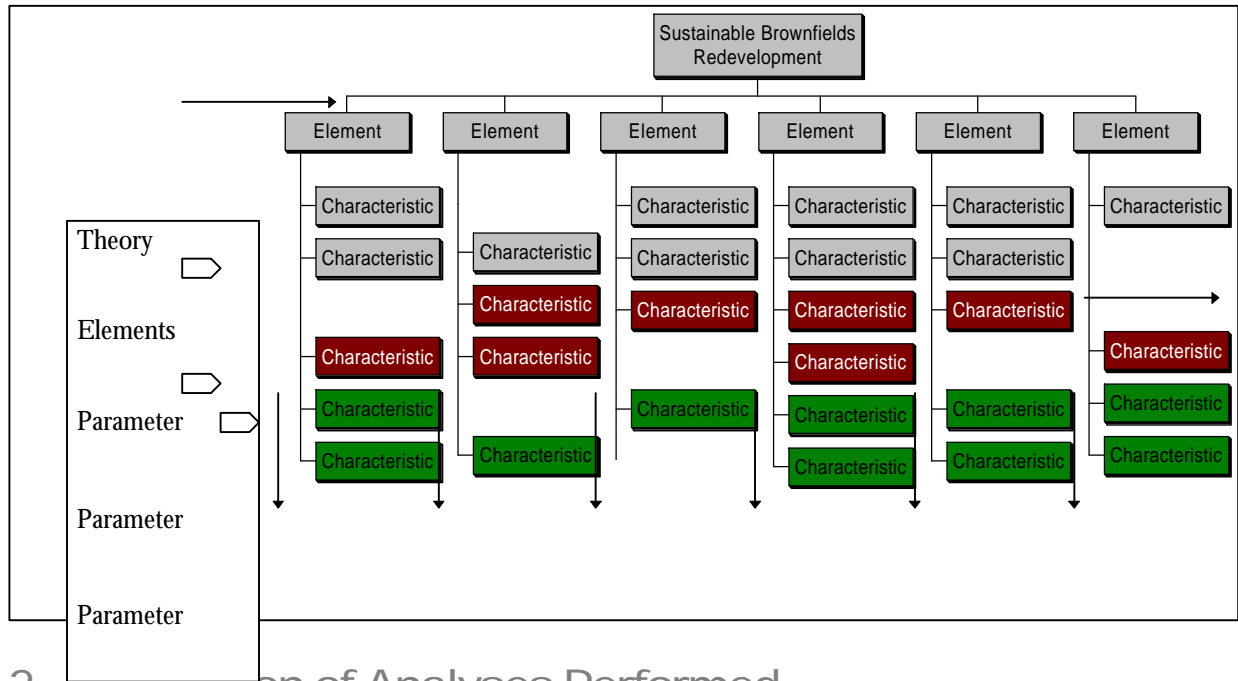
In general, Task 1 of this study employs a theory testing approach (see Figure 2.1) to examine the conceptual proposition that Brownfields redevelopment is sustainable. To accomplish this, the study seeks to “operationalize” the key concepts of sustainability and Brownfields redevelopment by collecting and analyzing relevant data through descriptive and exploratory research methods. The research data will be used to identify and define those PECs, or factors, that contribute to sustainable redevelopment of Brownfields, determine why those factors are important, explain how they support the basic theory, and describe what factors inhibit sustainable Brownfields redevelopment. These factors are then verified by correlation with existing projects in order to validate the basic theory, or identify corollaries to it.

Figure 2.1: Basic Theory Testing Approach

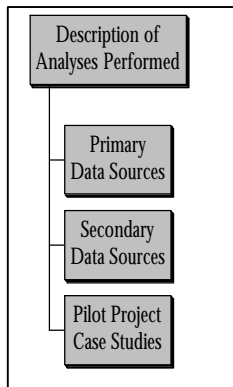


fundamental theory of sustainable Brownfields redevelopment.

Figure 2.2: Conceptual Model Framework for Sustainable Brownfields Redevelopment



2.2 Description of Analyses Performed



The analytical objective is to obtain information from the various sources of data to identify, define, and where reasonably possible, quantify those PECs deemed to be indicative of sustainable Brownfields redevelopment. The analysis is intended to describe the PECs as they are associated with a sustainable Brownfields redevelopment project and to differentiate between rural and urban community projects, where applicable.

The study originally focused on a series of data sources that were specifically prescribed by the EPA. The source data list was refined through the use of several screening criteria. These include the timeliness, availability, and

applicability of the information; the pertinent roles that designated individuals contributed to the Brownfields process; and the general ability of the information to cover a broad range of variables, as opposed to an in-depth analysis of any single one. As the research progressed, additional data sources had to be included in order to obtain sufficient data to cover the full range and objectives of the study.

2.2.1 *Primary Data Sources*

The primary data sources consist of structured personal interviews and on-site data collection. Interviews were conducted with designated EPA officials from various Headquarters program offices and regional Brownfields coordination offices; senior officials from five Federal agencies participating in the National Action Agenda Partnership (DOD, DOI, DOE, HUD, GSA), and local stakeholders actively involved with Brownfields redevelopment efforts in Cape Charles (VA), New Orleans (LA), Boston (MA), Chattanooga (TN), and the State of Rhode Island's Pilot Project in Providence. In addition, eight municipalities were surveyed by telephone interview for verification of the data.

Based on reviews of secondary data sources and the EPA Pilot Projects database (IRM, 1997), a preliminary list of questions to guide the interview process was developed by members of the project team. The list entailed pertinent issues ranging from abstract concepts to specific applications in order to identify: 1) recurring elements and characteristics; 2) variables in the element's characteristics caused by case-specific factors or an individual's perspective and context; and 3) those concepts and variables that would require further definition. These questions were initially tested and refined to facilitate the actual interview process. The questionnaire was further refined to tailor the interview process toward categories of information most pertinent to the interviewees' area of specialty or role in the Brownfields program/project. Interviews were generally conducted by two or three project team members and

were either in person or by telephone, depending on the person's availability and proximity to the Washington, D.C. metropolitan area. Each interview was planned to last for one hour. Detailed notes were prepared following each interview or site visit. From the detailed notes, a summary of the personal interviews for all the EPA and Federal officials was prepared and is included in Appendix E. Summaries of personal interviews with local representatives developed from the site visits are included in Appendix F.

In addition to the interviews of local project participants, background literature was collected and analyzed to clarify or support interviewee's comments.

2.2.2 *Secondary Data Sources*

Secondary data sources consist of Brownfields program information from government and private literature and database materials; and published literature pertaining to international projects, eco-sustainability, socioeconomic planning, and sustainable development efforts. A list of the EPA-prescribed program information sources used is contained in Appendix D. Additional literature sources were added during the research in order to supplement the program information sources and are included in the Bibliography.

2.2.3 *Pilot Project Case Studies*

Pilot Project case studies were derived from a review and detailed analysis of 15 of EPA's 157 Brownfields Assessment Demonstration Pilots. At the time the study was conducted, the total number of Pilot Projects was 115. This group represents the baseline for the analysis. An additional 42 grants have been awarded by EPA since the data for this study were compiled. The existing portfolio of the EPA "Pilot Projects" was considered initially as one of the primary sources of data for the analysis proposed as a part of this report. The information pertinent to each Pilot Project was to be obtained through the EPA Brownfields Management System that

incorporated reports submitted by each Pilot Project. Experience developed during the design and implementation of these projects was considered to be important for the purpose of identifying and defining the characteristics, elements, and parameters indicative of successful and unsuccessful Brownfields.

Unfortunately, it was not possible within the budget and time constraints of this report, to conduct a detailed analysis of all 115 projects existing at the time of this study. It was found necessary to select from this larger group, a subset that represented specific examples of successful cleanup, environmental restoration, and economic vitality. To select these specific projects, a screening process was developed to identify those Pilots that had the greatest potential for providing information on the broadest range of Brownfields issues and concerns.

Ideally, the selection process for this analysis should be based on a random sampling of the 115 existing Pilots. This would increase the probability of capturing the largest possible subset of variations in program approach and outcome. However, since this review of existing EPA Pilot Projects was exploratory in nature and concentrated on identifying specific characteristics and confirming their association with successful Brownfields redevelopment projects and their correlation with project sustainability, statistical reliability was less important than analytical validity. As a result, the selection criteria for the projects to be studied are more qualitative than statistical in nature.

As the study plan was established, a smaller group of 25 Pilot Projects (both national and regional) was selected from the total number of 115 projects through a multi-step screening process. This group of 25 Pilots was then further screened for relevance to the analytical objective with 15 of those projects finally selected for detailed study and inclusion in this report. The result of this screening process is that for this study, 25 Pilot Projects, or 22% of the total Brownfields Economic Redevelopment Initiative awards as of November 1997

were the subject of extended review. Fifteen of those projects, or 13% of the total, were screened for detailed analysis.

Because four of the five projects designated for site visits: Cape Charles, VA; Boston, MA; the State of Rhode Island; and New Orleans, LA, are also Brownfields Pilot Projects (Chattanooga, TN is not), they were automatically included in the final list of 15 projects in advance of the screening process. This ensured consistency of data elements and characteristics collected from among each of the project-related data sources.

2.3 Analytical Limitations and Controlling Assumptions

In order to meet the goals and objectives of the study within the constraints established by its scope, a set of study limitations was recognized and certain controlling assumptions were necessary.

In building a model framework, the ultimate validity and accuracy of the model framework will be directly dependant upon identifying, to the greatest extent possible, all scenario variables and the full range of interactions among those variables. The broader the survey of data, the greater the probability that potential “outlying variables” are considered. Likewise, the greater the detail of data that is available for analysis, the better the interactions, functions and predictive outcomes will be understood. Because Task 1 is an exploratory study, the emphasis of the data collection techniques employed is to capture as much information as possible regarding the broadest range of variables that may influence the success or sustainability of a Brownfields redevelopment analysis. The intent is to maximize the likelihood of identifying all the possible outlying variables.

Although the method of data collection is systematic in approach, the selection of data sources and subject sites for analysis is not the result of a statistically random sample. Therefore, there is no statistical basis for the generalization of these characteristics to the entire population of Brownfields sites as a whole. Hence, individual characteristics can only be associated with project sustainability, and not statistically correlated.

Because goals and objectives are unique to each program or project, no standard set of criteria were defined for successful and unsuccessful Brownfields redevelopment. Each project's progress will vary according to the various organizational goals, property location, economic market conditions, existing legal and regulatory contexts, timeframes established in which to achieve its objectives or milestones, and other factors often beyond the project management control. Therefore, it is assumed that the degree to which a project may be sustainable is the basis for associating the project's relative degree of success. In short, a project must be sustainable to be successful.

In addition, although a number of characteristics are associated with the sustainability of a project, they are evaluated only in terms of their presence or absence from the overall program or project. The level of success achieved, the skill with which project participants have carried out a particular program or project, and the affect that priorities, timeframes and delays associated with various activities have on sustainability, have not been included as variables under consideration in this study.

The determination of direct cause and effect for the association between sustainability and the inherent elements and characteristics of Brownfields redevelopment discussed here is also limited. Because the individual communities involved in Brownfields redevelopment cannot be isolated from the influences of the larger socioeconomic structure of American society and its larger ecological context, certain macro-structural variables may also influence

the development of sustainability. In defining sustainability at the community level and subsequently at the project level, this study assumes that all other extraneous variables are held constant in order to identify specifically those that may be under the influence and control of Brownfields project participants.

Further, for the purposes of this study, sustainable Brownfields redevelopment has been defined as redevelopment and growth maintained over the long-term and occurring within the limits of the environment so that the current needs of citizens are met without compromising the ability of future generations to meet theirs. However, no data exists to evaluate the ultimate degree to which projects have impacted the limits of their environment, met the citizens immediate needs, or may have impaired the abilities of future generations. This is because of the very limited duration (typically less than five years) in which all the projects studied have occurred, and because most of the projects have not yet progressed to completion. Therefore, an empirical basis for direct correlation of subject projects with the defined criteria for sustainable Brownfields redevelopment is not possible, within the timeframe and budget limitations of this study. Instead, it is assumed that a direct or indirect association of the elements and characteristics of Brownfields redevelopment with the theoretical principles and factors of sustainability and sustainable development at the community and project levels can serve as a reasonable basis for analyzing the potential for sustainability of any given project.

Finally, because Brownfields projects are at varying stages of development, the consistency and level of data available differs from one site to another. The absence of documentation on the activities of several of the projects is considered a severe limitation on the project.

- Overview of the Sustainable Development Concept
- Overview of the Brownfields Redevelopment Process

3.0 Summary of Data Sources

This section describes the study's research and data collection relating to the sustainable redevelopment of urban and rural Brownfields sites. Section 3.1 provides a general overview of the concept of sustainable development as it is presented in the literature. Section 3.2 summarizes key development and planning concepts associated with the Brownfields redevelopment process that have been developed from secondary literature sources and personal interviews. This information forms the basis for development of the key elements and characteristics of sustainable Brownfields redevelopment discussed in Section 4.0.

The development of background and resource information to support this analysis was focused (although not exclusively) on two primary subject areas. The first was the manner in which the concept of sustainability and the associated process of sustainable development have been described and understood both in literature and in the general perception of what is sustainable on the part of Brownfields project participants and the public at large. The second was the characterization of the Brownfields redevelopment process itself; concentrating on those structures, activities, and issues that are common to the process in differing contexts and that serve to distinguish the redevelopment of a contaminated property from other forms of real estate or community economic development.

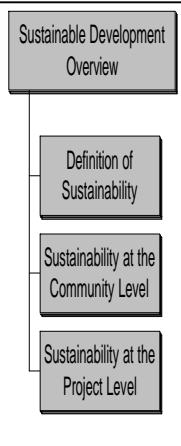
The approach adopted for this study was to collect and organize as much information about Brownfields projects as was possible within the boundaries set by budget and schedule. The information gathering techniques employed

included literature and database review, analysis of case studies, and structured interviews. These techniques were applied to a combination of primary and secondary data sources. A total of four sources of data were used to support this analysis. (1) The review of current literature was the major source for background on the concept of sustainable development and the Brownfields process itself, including approaches, issues and outcomes. (2) Structured interviews with key government officials (Federal, state, municipal), project principals, and representatives of stakeholder groups were used to access the knowledge and experience of Brownfields project participants. (3) On-site visits to five Brownfields project cities were also conducted for the purpose of first hand observation and interviews with local officials and community residents. (4) Fifteen of the 115 Pilot Projects (see Section 2.1) were selected as part of a screening review of existing case study literature on Pilot Project operations.

Although a systematic approach was employed in the acquisition and review of information, no attempt was made to statistically test hypotheses related to the causes or determinants of project success. Instead, the primary purpose of the effort was to identify as many of the major factors as possible that influenced the Brownfields redevelopment process and to determine where these factors could be associated with sustainable environmental restoration and economic redevelopment at the Pilot Project level.

Of concern was the development of a working definition of the concept of sustainability and its key components through a review of existing literature on the subject. This approach was also used to develop the major components of the Brownfields process itself. A second component of the process of information gathering was intended to capture the value of the perspective and experience of those actually involved in the Brownfields process, whether government officials, community participants, or private agencies and developers.

3.1 Overview of the Sustainable Development Concept



The perception that environmental issues are inextricably linked to other human social issues has increasingly played a more important role in the economic development and social planning processes of communities. This notion has found its most salient expression in the concept of sustainability.

Two primary themes pervade the literature on sustainability: 1) economic development predicated on ecological balance and 2) the equitable distribution of the benefits and adverse impacts of development. Although the overarching goal is still economic development, the objective is to find sustainable options that maximize the net welfare of the community while at the same time maintaining social, economic, and especially natural resources (Munaisinghe, 1993). This leads to a third theme embodied in the concept of sustainable development, that of maintaining a sustainable scale, or a level of material and energy consumption that does not erode the carrying capacity of the environment over time (Farrell, 1996).

Contained within these broadly defined areas, is the allied concept that sustainable development requires not only a concern for the environmental component of an individual project, but also engages the entire range of community values and patterns that may both affect and be affected by the development (Rapport, 1997). Thus, a single sustainable redevelopment project is also linked to the overall sustainability of the community as a whole.

Sustainability, itself, is not a new concept. In its simplest formulation, it relates to a basic historic principle, that of consuming the surplus product without diminishing the original stock beyond the point where it can be reproduced. It would be as familiar to a tenth century peasant or a seventeenth century farmer

as it is to a present day ecologist. What is new, is the importance of recognizing that, because the earth and its resources are finite, the principles of sustainability extend to natural capital as well as to social and financial capital (Kinsley, 1994). (Also, see Section 3.1.2.1, Economic Sustainability).

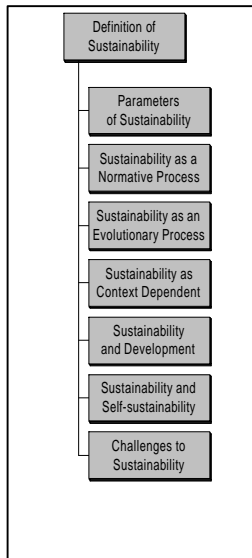
Sustainability is, however, often believed to be a more definitive concept than it really is. Despite its growing use as a basic guideline for economic development, the term does not have a single, generally accepted definition, or a comprehensive set of activities that normally associate with it. Depending on the context or purpose of its use, sustainability (or sustainable development) has “become a catch-all phrase that now refers to almost anything - from recycling to planting trees to integrated policy analysis to sustained growth of output to the use of environmentally - adjusted national accounts or alternative indicators” (Stallworth, 1997).

Correspondingly, a sustainable community may mean many things to the different people who live in it. To business owners, it means a healthy economy so that their businesses have a place in which to create and sell products and services. To conservationists, it means limiting the depletion of natural and biological resources. To parents, it means a safe environment in which to raise children. To residents in general, it means a secure, productive job market, and the ability to meet the need for the services that support their quality of life.

In order to consider sustainability in the context of the Brownfields redevelopment process, it is necessary to develop a general understanding of sustainability as a concept, in addition to formulating an operationalized definition of sustainability in the form of the parameters and elements that are associated with it. The intention is to connect sustainability to activities that are relevant at the individual project or community program level.

An important concern for sustainable Brownfields redevelopment projects is to identify those characteristics of sustainability that are accessible to project participants and can be manipulated to further the success of the project or contribute to the overall sustainability of the community. In essence, the effort is to determine how the direct, immediate activities of a Brownfields redevelopment project can be conceived and organized so that the project moves toward sustainability and minimizes the potential to create a Brownfields type situation in the future.

3.1.1 *Definition of Sustainability*



Although there is an extensive body of literature that addresses the concept of sustainability, much of this work is abstract in nature and deals with sustainability at the global or societal level. Several commentaries on the subject focus on this relatively vague construction of the concept and point to the need for a greater precision in defining what it means to be sustainable - or question whether a more precise definition is either possible or, in fact, desirable (Farrell, 1996; SCGPN, 1996).

A second body of literature recognizes the need for the development of a working definition of sustainability. This definition would be “operationalized” to the extent that it can be applied to specific problems and used as a mechanism to develop qualitative or quantitative measures (indicators) of sustainability (Herkert, et. al., 1996).

There are a number of ways in which to represent or define sustainability. As a conceptual framework, sustainability can be expressed in terms of the policies or principles that guide the redevelopment effort. Sustainability can also refer to a set of evaluative criteria based on the ultimate goal of creating a sustainable community. Or, it can be incorporated as an integral part of the development process itself.

In practice, sustainability has been applied to issues ranging from global economic development at the macro level to green buildings and pollution prevention at the micro level. It also represents a key component of the new approach to urban redevelopment encompassing such issues as urban sprawl, inner city and Brownfields redevelopment, and socioeconomic equality.

Sustainability is as much a reference to the process by which development takes place as to the policy or perspective that informs the process, or to the final outcome of the process. Currently no contemporary community has achieved the goal of being completely sustainable. A project, community, or culture however, can incorporate the component values and practices of sustainability into its planning processes, community design, buildings, and collective patterns of activity. Sustainability can then best be expressed in terms of an ongoing process of development or redevelopment that does not undermine its physical or social systems of support.

The process concept is incorporated in the definition advanced by the United Nations World Commission on Environment and Development (1987) - known as the Brundtland Commission - and later incorporated into the report of the President's Council on Sustainable Development, "Sustainable America, A New Consensus" (1993). Here, sustainable development refers to development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The Brundtland Commission goes on to state that, "in essence, sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations."

Sustainability and the associated process of sustainable development then have, at a minimum, two primary dimensions. The first is a concern about environmental degradation and a long lasting relationship between human beings and the rest of the natural environment. The second implies a core ethic of social intergenerational equity, along with an understanding that future generations are entitled to at least as good a quality of life as present ones” (Herkert, et. al., 1996).

“Sustainable development is a two-sided relationship, as both the well-being of mankind and society and that of the environment play a role in evaluating development activities. Social well-being can be measured in terms of the extent to which needs are satisfied, and the well-being of the environment can be characterized in terms of the extent to which environmental functions, and assets are left unharmed” (SCGPN, 1996). It follows then that resources (both social and ecological) are not consumed or depleted to the extent that they cannot be replicated sufficiently to allow for a new round of production and consumption. And, that the future creation of wealth in the community is thereby less environmentally damaging, more just, more secure, and increasingly focused on the more complex processes of development rather than on simple growth or accumulation.

The concept of sustainability therefore, represents a true paradigm shift to the extent that it reflects changes in the manner in which development is planned, the organization of the social mechanisms that control and implement planning, and the role of the community in the planning process. To some extent, sustainability redefines the nature of community itself.

3.1.1.1 PARAMETERS OF SUSTAINABILITY

The environmental impact of human activity is broadly characterized by: 1) the size of the population involved; 2) the degree of prosperity or material welfare

of the population; 3) the environmental intensity of the consumption process; and 4) the environmental intensity of the production mechanism (SCGPN, 1996). Each of these factors directly affect the potential sustainability of a given process or activity.

The process of sustainability itself, or the process of transforming human activity from unsustainable to sustainable patterns, can be expressed in terms of the quality of the relationship between these factors and the interaction of the various elements and characteristics that are associated with them. Sustainability is therefore a function of what activity is carried out; who performs the activity and how many performers there are; the level of material consumption incorporated as part of the activity; the potential environmental damage associated with the manner in which the material is produced; the manner in which the activity is carried out; when and where the activity is performed; and who benefits from the activity.

The parameters that govern sustainability, then, can be related to these primary factors, and are grouped under the core systems of societal structure - ecological, economic, sociocultural. Any consideration of sustainability must take into account the complexity, integration and interdependency of these three systems. "Solutions that target one area, such as the economy, often cause more problems in other areas because the links are neglected" (Hart, M., 1997(a)).

The difficulty inherent in developing an understanding of each of these systems is that each can be seen as a component part of the others while, at the same time, each is also defined as containing the others as component parts. For example, the ecological system provides the context in which the other two systems, social and economic, function. The activity of the other two systems cannot deplete ecological resources to the extent that they are no longer available or are too expensive to acquire.

Simultaneously, the ecology represents the source of the natural capital that is the basis for the economic system. The economic system is nothing more than a mechanism for employing human resources (social system) in the task of transforming physical resources (ecological system) into resources that are socially useful. In turn, the larger social system both contains the other two systems and is also constrained by their capability. The society as a whole, cannot place demands on either of the two systems that exceed their capacity (productive capacity in the case of the economy, carrying capacity in the case of the environment).



3.1.1.2 SUSTAINABILITY AS A NORMATIVE PROCESS

The definition of sustainable development articulated in the Brundtland Commission report establishes two dimensions of concern for sustainability; the continued satisfaction of human needs and the maintenance of the environment. But this definition does not specify which human needs are to be met, at what level, and who will be responsible for determining the mechanisms by which these needs are met. It further implies that the needs of future generations could somehow be anticipated by the current generation. With respect to the maintenance of the environment, the criteria to be used in measuring the extent to which ecological functions and assets are left unharmed are also not addressed (SCGPN, 1996).

Sustainability is therefore not based on some objectively fixed characteristic of the development process, but instead must consider a normative component.

Attitudes and perceptions of what is sustainable, what the requirements of human social systems are, and how those requirements are to be met will change from one context to another, and evolve over time.

In this context sustainability must, in itself, be considered as a social process in which certain decisions and trade-offs between immediately perceived human requirements, the perceived needs of future generations and the determination of environmental harm must be made. For example, if confronted with a 30 year supply of a limited natural resource, the current generation can decide to conserve the entire supply, determine that some portion of it must be reserved for the benefit of future generations, or assume that future generations will develop new patterns of activity or innovative technologies and will no longer require the resource at all.

From the perspective of the role of sustainable development in the Brownfields process, these questions emphasize the importance of the consideration of the social dimension in the development process. "Without proper analysis of social conditions and consultation in determining priorities, the services provided by a project may not be the ones that the ultimate beneficiaries find the most useful, or that they will help sustain by contributing to critical operations and maintenance" (Kaji and Koch-Weiser, 1997).

3.1.1.3 SUSTAINABILITY AS AN EVOLUTIONARY PROCESS

"No industry or development activity can be considered "sustainable" in and of itself" (Northampton, Co., 1994). It is clear that sustainability is not, a priori, an objective feature of the development process, but is incorporated as a

component element of planning; deciding what is to be done; and how the development is to be implemented. Sustainability is not a fixed, static classification, but is rather an evolutionary process that depends not only on what is done, but also on how it is done.

The process of sustainable development is an iterative one. Because the number of stakeholders and their individual perspectives will be sufficiently diverse, a number of rounds of planning and discussion will be required to reach the delicate and appropriate balance of the three parameters of sustainability for each community.

Although there are no existing communities in the United States that have achieved an ultimate sustainability in terms of a comprehensive process that can be maintained across multiple future generations, communities are moving toward sustainability and more sustainable practices. In this sense, sustainability is also a learning process as communities begin to recognize what industries, activities, and practices contribute to the long-term benefit of both the human population and the environmental resources on which that population depends.

3.1.1.4 SUSTAINABILITY AS CONTEXT DEPENDENT

What is sustainable in one community may not be so in another community. Sustainability is a function of economic and ecological resources and processes, balanced with a number of community factors. Therefore, the balance itself and the form the process will take depend on a number of factors unique to the individual interests, needs, and culture of the community.

Although no single approach to sustainability will satisfy all situations in all communities, it is possible to identify certain common elements of the process that will be part of any community effort. A sustainable approach will involve a

long-term, integrated procedure to harmonize resource use, investment, technological development, and institutional change. This must be done while recognizing that economic, ecological, and social issues are integrated and must be addressed together. For example, a strong sense of community and the building of a consensus among stakeholders who share a common vision of what the sustainable community should look like are important elements, as is the ability to formulate operational plans and develop indicators by which success can be measured (Lachman, 1997).

3.1.1.5 SUSTAINABILITY AND DEVELOPMENT

Much of the constituency for sustainable development in the United States comes from local efforts to create more sustainable communities (Goldman, 1995). The primary goal of a sustainable community effort is to meet basic needs in a manner that can be continued into the future. In some instances, sustainability is viewed as a technical issue related to the manner in which humans interact with the rest of the natural environment (ecology), while other perspectives are focused on the social or political issues surrounding social equity, human rights, and community redevelopment.

The sustainable component of the development process relates more to the manner in which development is approached and carried out than to the particular issues addressed. Sustainable development implies that the solutions to existing problems should be addressed by means of a comprehensive approach. Sustainable development therefore, is a reflection of community desires and values, and should positively sustain the community in the manner in which it wants to be supported.

As it relates to the Brownfields redevelopment process, this perspective of sustainable development implies that a Brownfields project should, in addition

to addressing the problems of contamination and underutilization at a given site, also contribute in some manner to the general socioeconomic future of the community. In this sense, Brownfields projects can serve as a catalyst to the ongoing process of sustainable development in the community.

However, the pursuit of sustainability can also place a significant burden on a Brownfields redevelopment project. It is important that sustainability should not impede the redevelopment process, or place an unrealistic burden on Brownfields redevelopment that is not required for other similar type projects. “Sustainability does not mean that businesses never fail, or that people never go hungry, or that pollution never happens” (Hart, M., 1997(a)). To require that these criteria be assured by the Brownfields development process can be an inhibiting factor that reduces development possibilities (such as interim use based projects) and encourages undesirable greenfield sprawl development in communities. Therefore, sustainability should further the Brownfields effort, not hinder it by imposing strict requirements that can actually decrease the chance for success.

3.1.1.6 SUSTAINABILITY AND SELF-SUSTAINABILITY

From the perspective of achieving sustainability at the individual project or community level, the determination of sustainability can be differentiated between those projects that will be self-sustaining, and those that will require some infusion of outside assistance, whether public funds or some other support mechanism. A self-sustaining activity can be identified as one that is capable of generating sufficient resources (both economic and natural capital) to support itself without depleting those resources. Economic support here would be defined as return on investment or profit to private developers or revenue (taxes and fees) to the supporting public entity that is sufficient to offset initial and subsequent costs. Correspondingly, activity that is not also self-

sustaining would require some input of public resources (labor, funding, natural resources) to offset the difference between revenue and expense.

In this sense, sustainability can be seen as a continuum moving from the most extreme condition of self-sustainability at one end to the opposite extreme of an environmentally sustainable project that, although successful and environmentally friendly, depends totally on public support. The level of self-sustainability, therefore, would vary according to the level of public support required.

For the most part, Brownfields projects will not, at least in their early development stages, be self-sustaining. "Local communities are not looking to soon become closed loop, to change their energy supplies to more renewable methods, or to shorten their supply lines. For the time being, they need development options that simply bring more money into their area to create or maintain jobs, and to provide tax revenues to support local schools and other governmental functions" (Stallworth, 1997).

Communities engaged in Brownfields redevelopment must, at some point during the development process, reduce the level of government support provided to individual projects. Ideally, Brownfields projects would be able to maximize leverage of the public and private endowment funds available to develop the project to its fullest, then strive for a consideration of self-sustainability. The idea of a local government - private enterprise partnership is one mechanism for organizing this type of structure.

The key issue for self-sustainability is defining that point at which public support gives way to private enterprise. This presumes that the ultimate goal of a Brownfields redevelopment project is a fully supportive, for-profit entity.

However, in many cases, the highest and best use of a redeveloped property may not be a commercial enterprise, but may be public in nature, such as a greenway, inter-urban park, or a rails-to-trails project. In these cases, the permanent support of some public entity may be necessary for the long-term sustainability of the project; the project may never become directly self-supporting. This does not mean that the project does not contribute to the overall sustainability of the community. The potential for increased land values surrounding the project, increased revenue from taxes, concessions, or user fees generated by the project contributes value to the community. These can be balanced against the ongoing project costs to demonstrate a variation on self-sustainability that is derived from indirect revenues.

3.1.1.7 CHALLENGES TO SUSTAINABILITY

“Uncontrolled growth is probably the greatest obstacle to sustainable development in the United States. Building on new untouched sites always destabilizes natural systems and can mean losing valuable agricultural or forestland. Access to new development requires more roads, more trips, more extensions of the urban infrastructure; in other words, more natural resources consumed and more pollution created” (Barnett, 1993).

The growth of Brownfields sites and the subsequent decay of inter-urban areas and rural industrial sites are a major component of the unsustainable community. This is a further expansion of the “use and discard” attitude that characterizes much of the economic development climate of American society.

A serious concern for the development of sustainable practices as a part of the development effort is that there are a number of alternative options which are not necessarily sustainable, but which, from a business standpoint may be preferable. In terms of cost effectiveness, development of greenfield sites is

often preferred to using existing Brownfields sites. The sustainable redevelopment of Brownfields sites is often seen as more costly, especially in the short-term. Therefore, best practices from an environmental or social standpoint are often competing with best practices from a business management standpoint. A rational business decision then is often to do something else rather than follow a "sustainable development" strategy.

For communities as well, what is considered good practice, or vital for the maintenance of the community's continued existence, may interfere with the concept of sustainable growth and development. As Michael Kinsley (1994) notes, the normal response to the recognition of declining economic circumstances is industrial recruitment; an attempt to identify any new outside sources of employment and income that may want to move into the community. But most of these business recruitments are unsuccessful because outside businesses are seldom inclined to invest in problem communities. In order to attract new businesses, inducements and incentives are often so great that the result is a net loss to the community.

Growing communities often have some significant feature or valuable commodity (e.g. exploitable natural resource, waterfront property, quality of life, etc.) that tends to support growth. But, in many cases, the resource runs out, demand for the resource decreases, or the growth itself tends to overwhelm the attractiveness of the community. Inevitably, this leads to efforts to control or limit growth in communities that have become victims of their own success.

3.1.2 Sustainability at the Community Level

Sustainability at the
Community Level

Economic
Sustainability

Sociocultural
Sustainability

Ecological
Sustainability

"Today's local economies are no longer 'local' and certainly not 'closed loop' because they are increasingly enmeshed in the larger regional, national, and international economies. As a result, it is very difficult to assess the

‘sustainability’ of production and consumption processes when sources and sinks related to that local area span the entire globe” (Stallworth, 1997).

Sustainability at the project or community level then is difficult to determine in absolute terms. The externalities (exogenous variables) are too influential - the macro economy, for the most part, drives local issues. However, by holding constant these external variables, it is possible to examine those elements of a successful redevelopment process that are themselves evidence of sustainability and that also contribute in a small way to the overall sustainable development of the larger community.

Although a discussion of sustainability at the community level cannot address all of the attributes or characteristics of sustainability evident at the societal or global level, incorporating sustainable concepts into the local development process does represent an alternative to existing unrestricted growth patterns. Increasingly, many communities have come to believe that environmental and other community development problems cannot be addressed in isolation, but must be part of a more comprehensive development approach (Lachman, 1997). This approach also recognizes the importance of communities as innovators and change agents in the process of achieving sustainability.

It is relatively easy to identify a community that is not sustainable - fewer good jobs at family wages, increased poverty, homelessness, general deterioration. However, determining the reverse, what makes a community sustainable, is not as obvious (Hart, M., 1997(a)). As previously noted, there is no single comprehensive approach to sustainability that is appropriate to all communities. Every community will be unique in defining what is sustainable. However, there are some general conditions that are common to sustainable communities

Sustainable Community – General Components

- | |
|----------------------------------|
| ✓ Economic Security |
| ✓ Ecological Integrity |
| ✓ Quality of Life |
| ✓ Empowerment and Responsibility |

Some general components that are critical to a sustainable community (Kline, 1996) include:

Economic Security - a level of economic activity that provides both employment and spending opportunities within the community and increases the amount of money that is retained within the community; by providing a variety of businesses that are environmentally sound, financially viable, and provide training, education and other forms of assistance to adjust to future needs.

Ecological Integrity - in harmony with natural systems by balancing system functions with resource thresholds, reducing and converting waste into non-harmful and beneficial purposes, preserving valued physical and biological resources, and by using environmental resources to fulfil human needs without reducing their ability to function over time.

Quality of Life - a more sustainable community recognizes and supports a sense of well-being, a sense of place, a sense of self worth, a sense of safety, a sense of connection with nature, and the provision of goods and services which meet their needs both as they define them and as can be accommodated within the ecological integrity of natural systems.

Empowerment and Responsibility - people are empowered and take responsibility based on a shared vision, equal opportunity, and the ability to

access expertise and knowledge for their own needs; and are able to affect the outcomes of processes that affect them.

Also important is an open and inclusive planning and decision making process focused on communication, cooperation, and compromise by multiple stakeholders in an effort to build consensus. "A sustainable community needs to be developed by the people who make up the community. It cannot be designed by a consultant. It cannot be implemented by experts hired specifically for the project. It needs to be implemented every day by the people who live and work in the community" (Hart, M., 1997(a)).

From these basic elements, a number of essential principles can be derived to represent a generic core of characteristics of sustainable communities.

Sustainable Community Characteristics

- ✓ Limitations on Growth
- ✓ Adaptability to Change
- ✓ Encouragement of Economic Self-sufficiency
- ✓ Creating a Vision
- ✓ Equalize the Benefits and Burdens of Growth
- ✓ Develop a Sense of Place
- ✓ Protect and Enhance Quality of Life
- ✓ Community Reorganization for Sustainability

Limitations on Growth - a sustainable community recognizes that growth must occur within some boundaries and is ultimately limited by the carrying capacity of the ecological environment. Important to this concept is the limitation of sprawl development and the adaptive reuse of existing, already developed land.

Adaptability to Change - evidenced by the understanding that change is inevitable and unpredictable, an effort to try to understand the behavior of the natural systems that sustain the community, and a willingness to make decisions

that are consistent with the natural direction of change in the ecosystem (Bernard and Young, 1997).

Encouragement of Economic Self-sufficiency - through the fostering of local ownership and the efficient and effective use of local natural, social, and financial resources to meet local needs, sustainability is enhanced by retention of resources within the community and the minimization of external linkages.

Creating a Vision - reaching out to a large group of residents to determine what they will support or what their concept of the future will hold (Beatley and Manning, 1997).

Equalize the Benefits and Burdens of Growth - development that benefits all income levels and neighborhoods rather than benefiting only the wealthy while leaving the burdens of growth to the lower income groups. Equity is a fundamental requirement for sustainability (Burlington, 1997).

Develop a Sense of Place - community members must become shaped by their place, by knowing their common history, geography and natural cycles and feel rooted (Bernard and Young, 1997).

Protect and Enhance Quality of Life - placing quality of life issues such as education, aesthetics, safety, the built environment, greenspaces, and distinctive community character at the forefront of policy and planning decisions.

Community Reorganization for Sustainability - organize to address together the economic, social, and ecological issues that are the most pressing and important; governance and management issues such as fairness in the community, fairness in the sustainability process, basic management logistics for the process, and how it all fits into the existing community structure.

3.1.2.1 ECONOMIC SUSTAINABILITY

The primary question for the consideration of economic sustainability is: What is to be sustained? One criterion is the requirement that economic development introduce income (in the form of jobs or expenditures) into the community (Goodland, 1994; Stallworth, 1997). This also provides a form of stability to the local community through the social value of employment, and the maintenance of long-term residence and attachments to the community. If a community does not have a strong economy, then it cannot be healthy and sustainable over the long-term. (Lachman, 1997).

In addition to good jobs and good wages, economic sustainability also considers stable businesses, energetic business activity, appropriate technological development and implementation, business development, etc. An economically sustainable development generates at least a part of the income necessary for its self-maintenance, contributes revenue to support the community infrastructure and services consumed, and includes the controlled distribution of the beneficial and adverse impacts of development (political economy).

A community can develop itself without resorting to runaway growth in the scale of its economy. Michael Kinsley (1994), the Director for the Economic Renewal Program of the Rocky Mountain Institute, suggests four basic principles: 1) increasing energy efficiency decreases the leakage of money from the community in the form of money spent out of town for various forms for fuel; 2) supporting existing local businesses by identifying items purchased outside of the community that could be provided locally with the resultant retention of money and jobs in the community; and 3) encouraging the development of new local business by the exploitation of underutilized local assets. These first three are believed to increase the attractiveness of the

community to investors, which leads to the fourth principle; that of recruiting compatible businesses that are in line with local conditions, and the goals of the community.

These four principles represent solutions that are sustainable over time and are appropriate no matter the condition of the local economy. Sustainable development, from the perspective of the economic system, requires that resources not be consumed at a rate faster than they can be renewed or replenished. Also, the ecological threshold (or the point at which an ecosystem can no longer continue to be damaged or altered without permanent failure) must be recognized, along with the recognition that the carrying capacity of any given area can sustain only a certain number of people (Kinsley, 1994).

The key requirement of the approach to sustainability is that some form of income and economic growth be maintained. However, a sustainable approach implies that along with the goal of maximizing the net welfare of the community, its stock of economic, ecological, and sociocultural resources must also be maintained over the long-term. This is a departure from the more classical economic theory, which is concentrated on a linear growth model focused on quantitative enlargement, rather than development. Qualitative development implies a different set of assumptions and a different approach than does the more traditional approach of quantitative growth (Goodland, 1994).

Traditional economic analysis has concentrated primarily on the output end of economic production with little consideration for the sources of natural capital. Historically, investments were made in the form of capital that was in shortest supply – human-made capital or the tools, machines, infrastructure and technology that are necessary to production. Social capital (i.e., the workforce, its capacity levels, the general knowledge base, and the social and cultural

institutions of society) along with natural capital (e.g., the resources of the natural world) were generally available in abundant supply. However, the increasing demands of modern society on the natural environment have made natural capital as significant a limiting factor on growth in the modern community as was human-made capital, historically (Goodland, 1994).

Economic development then becomes a normative trade-off between the requirements and demands of the community, the limiting factors of the productive capacity of the economic system, and (more increasingly) the limiting factors of the ecological environment (SCGPN, 1996). A new approach to development is required that recognizes, “A community can develop itself without growth. It can create housing, and jobs, expand cultural and educational opportunities, improve health, and protect public safety” (Kinsley, 1994). The long-term impact of a development project for the sustainability of a community becomes a process of maximizing the qualitative improvement of the community while recognizing the critical interplay of economic, social and environmental factors.

The economic implications of a project, then, will be primarily related to the interaction of a number of different factors including the project characteristics (e.g., the level of potential employment, the size of the initial investment requirement, the proposed use, etc.), the characteristics of the site and the particular area in which the project is to be accomplished (e.g. infrastructure, surrounding land uses, tax structure), and the implications for the social and ecological environment in which the project is located. Additional considerations are related to the distribution of project-related costs and revenues, and the risks to which local government may be exposed because of uncertainty related to the project’s future, or the nature of its impacts (Leistriz, 1994).

Therefore, there are four key considerations for the determination of economic sustainability. These include the extent to which the project contributes (either directly or indirectly) to the income of a community; the community's ability to gauge the degree to which the project can expand its resources through increased development, rather than growth; the community's ability to preserve these resources for future development through efficient consumption; and the community's ability to expand employment and improve the quality of life without placing undue economic risk on current and future populations. Both the environmental (natural capital) and social (human capital) implications of development must be considered along with the more traditional concept of increased economic output.

3.1.2.2 SOCIOCULTURAL SUSTAINABILITY

Although sustainability is usually focused on concerns related to the environment (specifically to the environmental carrying capacity of a given community) and economy, the social components of sustainability are also important. "Although we often see it as a source of conscience that is free of the pollution of social interests, nature is inescapably social" (Bell, 1997). The manner in which we understand and act upon nature is as much defined by the culture of a community, as it is by the limitation and quality of nature itself. Like nature, the concept of sustainability is a social construct (i.e., purposely created out of human cultural knowledge and experience as well as the process of balancing human values and needs with human perceptions of the ecological environment).

In order to be sustainable, then, a community must balance the new conception of a need for the preservation of natural capital in the development process with new elements of social, political and institutional organization, and new social values. These include changes in such areas as the relationships between

potential users and stakeholders, the role and responsibilities of owners, the existing authority systems, existing forms of public-private partnerships, and the overall belief and value systems of communities. In short, there must be a new way of looking at development as a mechanism of social change as well as a mechanism for conserving the environment.

Central to social sustainability then is the general enhancement of the quality of social life by improving the mechanisms by which community needs are met through appropriate facilities and services that enhance and reinforce community values. Two critical elements of this process are the creation of new forms of organization that enhance the individual social actor's capacity to coordinate social action and empower them as agents of the development activity (Cernea, 1994), and the equitable distribution of the risks and benefits of development. Sustainable social objectives include enhanced community participation in the decision and planning processes, social empowerment, increased community cohesion, stability, and diversity, and the establishment of intergenerational, regional, and socioeconomic equity (Goodland, 1994).

There is no benefit to development that does not have a basis of support in the community. In order to contribute to the sustainability of a community, a project must contribute to socially critical elements of that community. There must be compatibility between the proposed project and the community it serves. People and the social systems they create are at the center of the development process. It is the people of the community that are both the actors causing development to happen and beneficiaries of the consequences of development. Whether they are beneficiaries of development or its victims depends on the degree to which the development reflects the needs of the community.

Social sustainability is therefore based on the concept that individuals within the community will participate in determining what the needs of their community are, which needs take priority and how those needs are to be satisfied by the proposed development. The development of a design appropriate to the values and needs of a community is facilitated by the active involvement of the community at all levels of the decision making process, from the initial community assessment to the implementation of the final design.

Similarly, new forms of social organization are required to meet the challenges of development, especially where Brownfields redevelopment is concerned. The potential risk of contamination requires that, in addition to determining the levels of risk and potential reuses of a contaminated property, the community also participates actively as a partner in the development process. Traditional private development approaches, while potentially useful for some highly desirable parcels, may not be appropriate for more problematic sites. New forms of public-private partnership and development will be required in addition to a new understanding of the rights and responsibilities of ownership. There is a growing interest in the importance of communities and community-based initiatives in the development process, especially in the rebuilding of urban environments (Kingsley, et. al, 1998).

Another significant component of social sustainability is the concept that any development that does not incorporate equity is inherently unstable. In order to maintain stability and continuity into the future, a sustainable development must recognize a sense of equity or justice. Simply, a sustainable development should not enhance one segment of the community at the expense of another.

This involves consideration of regional as well as intragenerational, intergenerational, and socioeconomic equity. Regional equity implies that development be genuinely new for a community and not simply a relocation of

an activity from one community to another. Similarly, intragenerational equity emphasizes the importance of addressing sustainability in the present as a prelude to the consideration of intergenerational equity in the future (Goodland, 1994). Environmental justice or equity for cultural minority and socioeconomically disadvantaged groups continues to be a prime social concern and a major element for the consideration of sustainability.

3.1.2.3 ECOLOGICAL SUSTAINABILITY

The primary question for the consideration of ecological sustainability is: How can the ecological systems be sustained? One approach for sustainability is the concept that a community should fit within and nurture its ecological home. The ecological home being the biological, topographical, climatological, and geohydrological conditions and the interconnected natural processes within which the Brownfields property, city or community is located and which influenced it. The concept implies that the community should strive to complement its surrounding environment by functioning as, or as part of, an ecosystem (Beatley and Manning, 1997). An ecosystem described in simplest terms is “an interconnected community of living things, including humans, and the physical environment within which they interact” (IEMTF, 1995). E.P. Odum, the renowned Harvard University ecologist described an ecosystem as “any area of nature that includes living organisms and non-living substances interacting to produce an exchange of materials” so that “a flow of energy leads to a clearly defined [natural system]” (Odum, 1959 and 1971).

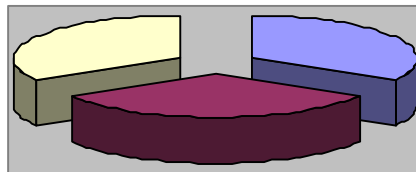
Odum’s definition is important because it presents the basic principles of “exchange of materials” and “flow of energy” inherent to an ecosystem. A sustainable ecosystem must meet four criteria. It must have the tendency to generate materials that can only be exchanged with other system components. The generation of the aforementioned materials must be limited based on the carrying capacity of the resource(s). The system’s waste products must be minimized so as not to impair the

flow of energy. The system must contain a rich diversity of living organisms and non-living substances that provide the flexibility necessary to adapt to changing external conditions. To fit into the ecosystem, therefore, a community needs to seek a balance between its physical, material, and emotional needs and these principles.

No one model can exist for determining where this balance occurs, nor will the state of balance be static. The balance must make good sense for the individual community based on its current ecological, economic, and sociocultural profile, as well as its common vision for the future. Therefore, the balance should be continually evaluated and reconsidered.

Ecological sustainability also considers the broad-scale, long-term (or spatial and temporal scales) ecological consequences of a redevelopment project. This can only be accomplished if the community understands the complexity, diversity and resilience of its own natural systems and appreciates the interrelationships that link every member of the community to their surrounding environment. This

Ecological Sustainability Components



■ Natural Forces & Hazards ■ Physical & Biological Diversity □ Greenspaces

understanding and appreciation should focus on three key areas.

The natural forces and hazards that affect the community resiliency – or how the community attempts to live and grow within them. Hurricanes, floods, droughts, sand dune migration, soil erosion, and other natural forces represent unique limitations on sustainable development. Sustainable communities seek to avoid or reduce their exposure to these and other similar hazards over a period of time by controlling the development, or even “retreating from high-risk areas” (Beatley and Manning, 1997).

The diversity of biological species and uniqueness of physical features affected by the community - Endangered species as well as common species of plants and animals represent key indicators of an ecosystem’s health. Habitat areas for these community residents and unique physical features of the landscape such as watersheds, wetlands, shorelines, prairies, mountains, and canyons are all valued assets that require consideration for use, restoration or protection in ecologically sustainable development.

The importance of greenspaces to a community’s psychological and emotional well being, as well as general health; and greenways to the health and adaptability of local plants and animals - Ecological sustainability protects, creates, and enhances greenspaces and in so doing, increases the aesthetic and economic value of the urban landscape. Greenspaces “make important ecological processes more visible or apparent to [a community’s] residents” (Beatley and Manning, 1997). By creating urban greenspace, sustainable development provides accessibility and visibility to the natural processes, which is critical to increasing the community’s understanding and appreciation for the ecosystem. In addition, greenways help reduce fragmentation of natural habitats. This increases the natural ability of plants and animals to respond or adapt to changes in the ecosystem (Labaree, 1992).

A rapidly growing approach being employed by Federal land management agencies and non-profit conservation groups to achieve sustainable communities is the concept of ecosystem management. According to the Ecological Society of America,

“Ecosystem management assumes intergenerational sustainability as a precondition for management rather than an afterthought. Thus, the manager accepts responsibility up front for managing in such a way as to ensure provision of the opportunities and [natural] resources we enjoy today to future generations. Sustainable strategies for the provision of ecosystem goods and services cannot take as their starting points statements of need or want such as mandated timber supply, water demand, or arbitrary set of harvests of shrimp and fish. Rather, sustainability must be the primary objective, and levels of commodity and amenity provision adjusted to meet the goal” (ESA, 1996).

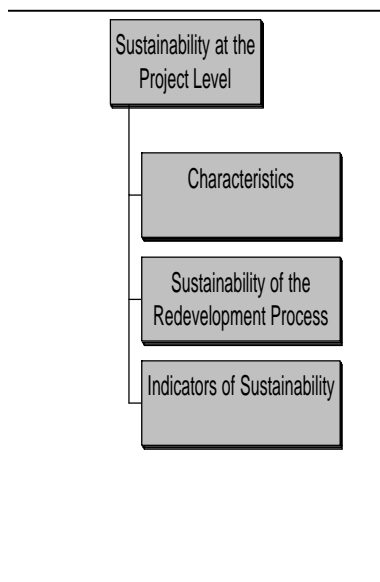
As evidenced by its guiding principles below, ecosystem management can serve as an effective framework for planning and decision-making in sustainable development at the community level.

Table 3.1: Principles of Ecosystem Management (IEMTF, 1995)

- ✓ A shared vision of the desired ecosystem condition
- ✓ Coordinated approaches among all stakeholders
- ✓ Ecological approaches to restore or maintain biodiversity
- ✓ Incorporate sustained economic, sociocultural, and community goals
- ✓ Respect and ensure private property rights
- ✓ Recognize that complexity, dynamics, and heterogeneity are constantly changing over space and time
- ✓ Use adaptive management
- ✓ Integrate best scientific information and techniques into decision-making
- ✓ Establish baseline conditions for measurement and monitoring of ecosystem functions and sustainability

Another approach to ecological sustainability that can enable communities to pursue sustainability through transition periods is the concept of interim use. The practice of designating individual sites, clusters or riparian areas as greenspaces, on an interim basis, can provide unexpected value by increasing the attractiveness of a community. This contributes to the quality of life of neighborhood residents and to the value of their properties. In addition, it can sustain wildlife habitat while providing food and recreation to the community. Examples of interim uses of greenspace are urban parks, gardens, and rails-to-trails type of recreational spaces.

3.1.3 Sustainability at the Project Level



Although sustainability should be considered at all levels of decision making - local, regional, national, and global - the primary focus of the Brownfields redevelopment effort is at the local or community level. This is the primary focus of action for most stakeholder groups engaged in the Brownfields process.

In this case, local refers to the immediate environment in which the social actors function. This environment could encompass their home, work, and recreational setting (e.g. shopping, restaurants, etc.). This may be a rural district, neighborhood, small town or a major metropolitan center, depending on the focus of the active community.

3.1.3.1 CHARACTERISTICS OF PROJECT LEVEL SUSTAINABILITY

In order to translate the abstracted concept of sustainability into an operational, project-level definition to serve as the basis for a model of sustainable redevelopment, it is necessary to identify those attributes or characteristics of

sustainability that can be observed and associated with sustainability at the project level. Because the number of characteristics that can be associated with sustainability is large, these characteristics are grouped according to the three primary systems or parameters (economic, ecological, social) that comprise the basis of human society.

At the project level, each of the societal systems serves to define or provide direction for the redevelopment process. The site profile (ecological system) determines what can be done with the site physically. The community profile (social) defines what uses will be beneficial to the community and saleable or marketable to the developer. The local economy (economic system) identifies available resources for development and the extent to which the local community can support the development.

The important issue is to connect sustainability to activities at the project level. The intention is not to impede the project, but to assist the project in identifying what sustainability really is and which already existing project activities will support sustainability.

"The most successful projects have three characteristics in common: First, the community created a vision of its future that balances economic, environmental and social needs. The community viewed its future in the long-term - not on the order of years, but on the order of decades or generations. Second, the vision incorporated the views of a wide cross-section of the community. Third, the community figured out how to keep track of its progress in reaching that vision" (Hart, M., 1997(a)).

3.1.3.2 SUSTAINABILITY OF THE BROWNFIELDS REDEVELOPMENT PROCESS

There is a distinction between a successful Brownfields Pilot Project (i.e., a project that meets its original goal of redeveloping a site that otherwise might not be developed) and a sustainable Brownfields project. The latter meets criteria defined for sustainability that may not be a prerequisite for the immediate success of the Brownfields project itself.

Although the determination of sustainability at the project level is somewhat tenuous, nevertheless, there are identifiable aspects of sustainability, which are evident at the project level and which can be determined. The remainder of this report will specifically focus on two basic components of the model framework: (a) how the concepts of sustainability and Brownfields redevelopment are perceived and approached on the local level; and (b) the determination of the major elements and characteristics of Brownfields redevelopment projects that can be associated with sustainability in the redevelopment process.

3.1.3.3 INDICATORS OF SUSTAINABILITY

Apart from presentation of the framework of sustainability at the community level, a review of the existing literature also indicates that many communities are developing their own indicators of sustainability. Although these are in part a function of the unique goals and conditions of individual communities, some general themes in terms of what represent “good” indicators can be identified.

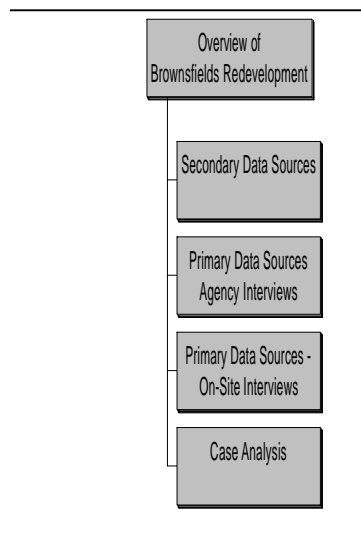
Employment related indicators are considered significant measures and include calculation of the concentration of employment; that is the portion of the total employment of a community that is carried by the largest employers. The lower the concentration of employment, the greater the diversity of the community and hence, the greater the potential for long term sustainability (Hart, M., 1997(a)).

Other salient economic indicators include the actual rate of real unemployment, the distribution of jobs and personal income across community residents, the percentage of money retained within the community (leakage), and the total amount of money available to the community to finance new development. Lifestyle economic measures are often presented as potential indicators of sustainability and might include the level of work required to fulfill basic needs as measured in hours of work at the average community wage required to pay for the basic requirements (Hart, M., 1997).

Social lifestyle, levels of education, and other community factors also contribute to the long-term sustainability of a community and are generally recognized in the formation of indicators of sustainability. However, these indicators are not necessarily subject to the same precision of measurement that is characteristic of economic measures and are more likely to depend on criteria that are unique to the specific community. Some examples include: measures of cultural diversity, the degree of community cohesion and attachment to the community exhibited by residents, the level of access to cultural and community defining events, the level of urban sprawl development as opposed to development in core districts, etc.

A number of specific indicators of ecological sustainability have been defined by the literature and are also the subject of discussion as to which are the most reliable or applicable measures. In addition to standard indicators of environmental health such as air and water quality, biodiversity, natural resource consumption and thresholds, and hazardous chemical use, some additional indicators related more directly to sustainable development have also been identified. These include human population growth and distribution, the amount of greenfield acreage consumed, the percentage of sensitive habitat or endangered plant and animal species potentially threatened, natural habitat resistance and resilience, changes in the modes of transportation used or the length of trips made by residents, and energy consumption levels (Vogt, 1997).

3.2 Overview of the Brownfields Redevelopment Process



In order to develop a perspective on the Brownfields process itself, information was developed from two primary sources. The first was a review of secondary literature, including information available as a part of electronic web sites that have been created either by the Pilot Projects themselves, or by other organizations interested in environmental restoration, urban affairs, or economic development. The results of this effort are presented in Section 3.2.1. A second source was developed through structured interviews with EPA, other Federal agencies, local officials and project stakeholders. The results of the EPA and Federal agency interviews are summarized in Section 3.2.2. Section 3.2.3 presents the results of interviews with local officials and project stakeholders that were a part of the on-site visits. In addition, a summary of each of the 15 Pilot Projects that were selected for extensive review is provided in Section 3.2.4.

3.2.1 Secondary Data Sources – Literature and Database Review

The collection of secondary source data was concentrated on the most recent literature available on the subjects under study. As the approach to Brownfields redevelopment is relatively recent, it was assumed that the most current materials would be fully developed and therefore more supportive of the analysis proposed. In addition to a general survey of articles published in print form such as database information and selected conference proceedings, sources of data also included a review of the numerous electronic publications available on the internet (see Appendix D for a summary of electronic sources consulted).

The review of secondary sources incorporated a perspective that covered the analysis of the Brownfields process from sources both external to, and integrally a part of, the Brownfields process.

Apart from the real or perceived presence of contamination at a Brownfields site, a number of key characteristics have been addressed in the literature that are applicable to the sustainability of a Brownfields redevelopment effort.

Key Characteristics of the Redevelopment Process	
✓ Current and Future Land Uses	✓ Pedestrian Orientation
✓ Historic Character	✓ Regional Open Space System
✓ GIS Inventory	✓ Urban Growth Boundaries
✓ Regional Development Model	✓ Transfer of Development Rights
✓ Natural Processes	✓ Transit Development
✓ Multi-modal Transportation	✓ Sidewalks, Walkways, and Bikepaths
✓ Jobs-housing Balance	✓ Conservation Easements
✓ Affordable Housing	✓ Land Trusts
✓ Comprehensive Plan	✓ Purchase of Development Rights
✓ Investment of Public Capital	✓ Urban Forestry
✓ Sprawl Development	✓ Planning Tools
✓ Density of Development	

Current and Future Land Uses - Current land use is one of the factors to be considered in determining the reasonably anticipated future land use of a site. One of the tools for achieving sustainability is a Land Use Action Plan, (USEPA “Green Communities”, 1998) which considers both existing and future land uses in the community. The Institute of Responsible Management's (IRM, 1997) matrix of key Brownfields variables also includes prior use of target sites as a component element for consideration.

In this context, land use planning is one of the most important tools available to planners in influencing the pattern of development occurring in an area. Land-use design and control is one mechanism for implementing farsighted designs

that promote the sustainable city. Designs for clustered development, higher densities, and live-work communities move toward a similar balance between economy and the environment.

The challenge for land use planning is to obtain such a balance. In addition, a sustainable development that aims to achieve social justice must also find ways to avoid land-use development of the type that promotes housing segregation, unequal property-tax funding of public schools, jobs-housing imbalance, the spatial imbalance of economic opportunity, and unequal access to open space and recreation.

Historic Character - The town of Manchester, VT, (Krohn, 1997) has a planning and zoning program that works to create guidelines that are consistent with the town's sustainable development vision. It aims to preserve the town's "village" atmosphere, protecting its scenic, historic and natural beauty. One of the essential features of the IBA Emscher Park project in Germany is the preservation and re-use of its historic legacy. Planners, architects and artists are attempting to harmonize the industrial elements from the past with the entire environment. New economically viable uses for nineteenth and twentieth century architectural and technological monuments and buildings are being sought.

GIS Inventory - A Geographic Information Systems database can prove to be a very valuable tool in the Brownfields redevelopment process. Hennepin County, Minnesota Commissioner Randy Johnson (1997) has said that GIS is one of the most promising innovations in new technology for local governments. It allows local planners to analyze and manipulate large volumes of data in remarkable new ways, all within a geographic framework. GIS is a tool that is revolutionizing local government planning from urban design and zoning to environmental management and economic development.

The city of Baltimore (Leavy & Paull, no date) is nearing completion of a comprehensive GIS Inventory of vacant and underutilized commercial and industrial sites. This inventory details over 25 fields of information on each site, including the location, acreage, ownership, proximity to transportation modes, etc. Public information regarding environmental conditions and regulatory status will be part of the database. The inventory will feature digitized photographs of many of the sites and will be used both for planning purposes and to market and promote sites to private investors.

Integration of Brownfields into a Regional Development Model - One of the best ways for communities to generate new investment, business expansion, employment, and income growth is through metropolitan cooperation by developing regional approaches for economic growth, environmental quality, and social equity. HUD Secretary, Andrew Cuomo, (1997) has said, "the heart of the metropolitan economic strategy is the recognition that metropolitan regions are fundamental building blocks of the nation's economic prosperity in the globally competitive marketplace."

In his article titled, "In America's Cities", John J. DiJulio, Jr. (1997) has said that community institutions need to place their neighborhood strategies in a regional context, understanding how government policies interact with the larger economy, and engaging where appropriate, in metropolitan issues and decision making. The new challenges of persistent poverty, economic restructuring and demographic transition now require communities to reach out to a regional level of decision-making.

The Joint Center for Sustainable Development (1997) states in its progress report to the President, "If we are to become a nation of sustainable communities in the 21st century, we must develop new strategies that enable city

leaders to work together with their counterparts in surrounding suburban and rural jurisdictions."

Integration of Natural Processes into Community Infrastructure - In "Recommendations for Action Planning," (EPA, 1998), EPA has proposed encouraging industrial land developers to preserve natural amenities and to incorporate natural features and environmentally beneficial landscaping into their development proposals.

Multi-modal Transportation – ISTEA - The Intermodal Surface Transportation Efficiency Act (ISTEA) promotes the concept of multi-modal transportation. It introduced a comprehensive approach to planning, one that removes the incentives for building highways rather than other transportation modes, such as mass transit and even bike paths. It also encourages transportation decision-makers to better integrate the transportation facilities and systems already there. In order to qualify for ISTEA funds, decisions must be made in a way that makes the most sense for the long-term economic, social, and environmental vitality of the community. This is also essential to the building of sustainable communities.

Jobs-housing Balance - One of the factors contributing to a sustainable community is the degree to which people working in a community live near their place of work. It is important to strike a balance between the two kinds of uses, residential and commercial/industrial, to achieve a healthy, vibrant community.

The Maryland Department of Housing and Community Development (May 1997) is developing a "Live Near Your Work" (LNYW) program to encourage employees of Maryland's businesses and institutions to buy homes near their workplace. The goal of this initiative is to stabilize the neighborhoods surrounding the State's major employers by stimulating homeownership in

targeted communities. The LNYW program would provide a minimum \$3000 cash grant to homebuyers moving to targeted neighborhoods. The State would contribute \$1000 per homeowner, which would be matched by contributions from both the local government and the employer.

Affordable Housing - Social sustainability implies equal access to adequate services and employment by all members of a community. As noted by the Center of Excellence for Sustainable Development (1997), in examining housing opportunities in a community, it is important to determine what percentage of housing is designated for low income earners, and how the needs of the different sectors of the community are being met. One of the important criteria is the percentage of households that have below average income and spend less than 30 percent of their income on housing (including utilities).

The Clinton administration has embarked on an ambitious plan to demolish some 100,000 public housing units - about one-twelfth of the entire public housing stock - by the year 2000. Creative replacement efforts are under way in many cities, with greater emphasis on smaller-scale, economically integrated affordable housing developments.

Existence of Comprehensive Plan - The primary purpose of a comprehensive plan is to enable local government officials and citizens to anticipate and to deal constructively with the changes occurring within their community. The plan includes an analysis of past trends and development, existing conditions, as well as goals and objectives for the future and proposals for accomplishing these goals, objectives, and policies.

The Baltimore City (Maryland) Department of Planning is now engaging in the creation of a new citywide Comprehensive Plan. Key topic areas and subcommittees of Plan Baltimore (Leavy & Paull, No Date) include Community

Economic Development, Housing, Transportation, Public Facilities, and Urban Design. Brownfields revitalization is an explicit part of both the Community Economic Development and the environmental elements of the plan.

The primary end product of the city of Seattle's Sustainable Development Initiative, "Toward a Sustainable Seattle," is a comprehensive plan framed around making the city sustainable into the 21st century. Chattanooga (Tennessee) also has produced two comprehensive "visioning" plans, Vision 2000 and Revision 2000, as well as various specific plans for individual projects, as a guide for its sustainable development initiative.

Public Capital Investment – Public capital investment and the manner in which a governmental entity patterns and times such investment can be an important tool in the development and redevelopment of land; and a major determinant of land value. The increased land value realized by public capital largely determines the intensity of development. The type and amount of investment precludes development options and intensities, shaping the amount of development and the way development takes place.

For example, in the Washington, D.C. metropolitan area, the construction of a subway stop can create millions of dollars in land values due to the accessibility now afforded the location. Subway accessible locations often become nodes of future development. The mere unveiling of such public capital investment at a certain location is sufficient to increase real estate speculation for a radius of several blocks around the site (Levy, 1994). The development and design of a whole region can be shaped by public capital investments in highways, public transportation, parkland, and water and sewer capacity. A community's estimated or projected future needs can be compared to the present infrastructure to determine needed modifications or augmentations to foment development.

Public capital investment and land use controls, the principle methods by which communities can affect development/redevelopment, should be coordinated to reinforce each other. It is important for a community to outline its needs and synchronize these methods with the comprehensive plan to ensure fruition of those needs.

Avoidance/Prevention of Sprawl Development - Sprawl is a pattern of physical development characterized by the decentralization of land uses. It is caused by the separation of land uses brought about by zoning. The need for single-use zones was primarily in response to the conditions created by the mix of polluting and unhealthy industrial uses in residential areas. Modern zoning since the late 1920s has essentially involved such a separation of uses. The resulting sprawl development requires the use of a private vehicle to move from one single-use zone to another. The success of this development has destroyed the pedestrian way of life and the support for mass transportation.

The Maryland Senate passed a bill (State Bill 389, 1997) aimed at channeling State infrastructure to designated growth areas. This is the Smart Growth initiative that seeks to guide development away from rural and environmentally sensitive areas and toward those with the necessary infrastructure to support growth. The bill would channel State spending to areas inside the Baltimore and Washington, D.C. beltways, incorporated cities and towns, and certain industrial and commercial areas chosen by county governments.

Density of Development - Sprawl has proliferated in many areas due either to current land use policies, or their absence. There has traditionally been little focus on controlling growth. Low-density sub-urbanization has been encouraged by Federal tax deductions and mortgage guarantees for single family residences. Not all the direct costs of servicing low-density developments are

passed directly to the homeowner; some of them are hidden. In his study of the fiscal costs of low-density housing, J. Dixon Esseks (1998) has noted that in addition to the increased safety risks associated with longer response times for public safety services, the tax revenues generated from sprawl development in urban fringe areas failed to cover the cost per mile for the increased roads required to service the communities.

Greater density can be encouraged by municipalities in many ways. Residential infill development allows builders to construct buildings on abandoned or vacant lots in between existing structures. Residential conversion can be achieved by subdividing dwelling units to create additional units, such as basement flats. Infill and conversions make greater use of infrastructure and services and thereby increase efficiency in residential environments. Cluster development which involves grouping housing units tightly together in a landscape so that they share servicing structures, while leaving the rest of the site for open space and recreational areas, protects the prevailing features of the landscape. Cluster development also provides the economic and social benefits of high-density settlements while conserving landscape function.

Pedestrian Orientation - Many communities are using light rail and pedestrian friendly design to change the negative impacts of the automobile. The West End Neighborhood of Vancouver, British Columbia (Durning, 1997) provides one of the answers to creating a sustainable and environmentally sound way of life. It is a model of good urban design, which creates a public realm that is safe, inviting, and conducive to the community. The road intersections have raised concrete planters that are landscaped with trees and shrubs. The traditional street grid is broken with such diverters that provide smoother traffic flow - by foot, bicycle and even car - than the sprawl model of cul-de-sacs, feeder roads, connector roads, and highways. The neighborhood's small blocks and narrow lots not only make walking more interesting, but slow traffic, as drivers tend to

adjust their velocity based on available road space, not posted speed limits. Parked cars in the curb lane make pedestrians feel safe from traffic, while a row of street trees and grass, and landscaping between the sidewalk and buildings further encourages walking. Smaller setbacks from the street give a human scale.

Regional Open Space System - One of the significant goals of the IBA Emscher Park Project in Germany was the establishment of a green corridor, connecting 17 cities, using existing water-courses and greenspaces - Emscher Landscape Park. A common element found in many comprehensive plans in various parts of the world is the retention of a system of greenspace that helps to ensure a continuum from a low-density rural periphery to a high-density urban core.

Besides providing parks, recreational fields and trails in a metropolitan area, such a greenspace system also plays a major role in shaping development patterns throughout the region. By developing a comprehensive system of parks and trails, the greenspaces of a region can be used to serve as a boundary between urban and rural areas, and can steer new development away from the urban fringe. The benefits of greenspace plans for managing the growth of urban regions include: efficient allocation of public infrastructure, preservation of open space resources, and reinvestment in central cities.

Urban Growth Boundaries – Urban growth boundaries are sets of planning tools that manage growth around urbanized areas to promote high densities and prevent sprawl development into outlying areas. Urban growth boundaries can be a valuable tool in making transit service more effective and targeting development along transit-oriented designs.

The Buckingham township project in the Metropolitan Philadelphia (Pennsylvania) area is promoting municipal land use regulation that increases the density in some spaces while protecting open space elsewhere (Greenspace

Alliance, 1997). To accomplish this goal, one of the mechanisms that the township is considering is the creation of urban-growth boundary lines. This is a type of comprehensive greenspace planning, known as greenbelt planning.

The primary benefit of greenbelts is the preservation of a ring of open space at the urban/rural fringe. While defining a boundary for growth, greenbelts help to foster easier circulation among densely developed areas while maintaining the rural character of areas beyond. The presence of greenbelts effectively prevent the extension of public investment in infrastructure and transportation to a wide area of low-density, single use development of the type often considered synonymous with urban sprawl.

Transfer of Development Rights – Transfer of Development Rights (TDR), or the sale of one parcel's development rights to the owner of another parcel, allows more development on the second parcel and reduces or prevents development on the originating parcel. Under such a program, development rights are severed from a lot designated for protection (sending area) and the severed rights are transferred to a lot in an area where additional development is permitted (receiving area).

Montgomery County, MD has used the device of TDR to preserve agricultural land (Johnson & Madison, 1997). The county chose growth areas that already had infrastructure in place, as receiving areas, allowing them a higher density through the use of TDRs. Receiving areas should allow sufficient density to attract developers, yet the housing density allowed must also be compatible with existing development.

High-density Development with Well Integrated Transit Development - While auto-oriented transportation infrastructure is associated with sprawl, the reverse effect can be achieved by land use planning focused on attaining higher

densities, along with well-integrated transit development. A study of major cities around the world (Center for Renewable Energy and Sustainable Technology, no date) concluded that, based on auto access, a city's center could accommodate an approximate maximum of 120,000 jobs. Beyond that point, office space must be sacrificed for additional parking and road space. Instead, providing access to the city center by mixed modes of road and transit can allow a city to grow beyond that point while remaining attractive and livable.

Transit can induce high-density commercial development because it represents to developers and employers an investment in fixed facilities that will be in place for a long time. Other studies have shown that well planned transit systems can concentrate housing and urban amenities around transit lines and stations, reducing reliance on cars. Total travel demand in regions that have successfully integrated high-density and transit may be four to eight times lower than in other areas.

Network of Sidewalks, Walkways, and Bikepaths - One of the priorities of the town of Manchester, VT, as outlined in its Community Vision, is to maintain an efficient and safe park-and-walk environment. It proposes to have a network of sidewalks, walkways, and bicycle paths connecting all parts of town, linking residential areas with recreation, commercial, government, and essential services. The goal is to have parking areas that will be attractive and well integrated into the walkway system.

Conservation Easements - The Smart Growth and Neighborhood Conservation initiative of the State of Maryland also includes the Rural Legacy Program that will establish greenbelt areas throughout the State. It will redirect existing State funds into a focused and dedicated land preservation program specifically designed to limit the adverse impacts of sprawl on agricultural lands and natural resources.

The program will reallocate State funds to purchase conservation easements for large contiguous tracts of agricultural, forest and natural areas in open space where public access and use are needed and are generally subject to development pressure and fee interests. Local governments and private land trusts will be encouraged to identify Rural Legacy Areas and to competitively apply for funds to complement existing land conservation efforts or create new ones.

A similar program in Routt County, CO (1987) resulted in the setting aside of over 10,000 acres as perpetual ranch land through conservation easements. The county approved a tax-increase initiative specifically for purchasing such easements.

Land Trusts - The town of Dunn, WI (Gausman, 1997) has created a land trust to permanently protect farmland and environmentally sensitive areas. The Community Land Trust model creates and maintains affordable housing by separating the cost of housing from land costs. The land is purchased and held in trust by a non-profit organization. The Lopez Community Land Trust (LCLT) is one such land trust on the island of Lopez, one of the hundreds of islands making up the San Juan Archipelago. People interested in owning an LCLT home lease the land and purchase their home. As a result of volunteer labor, costs are kept down due to the involvement of the LCLT.

Purchase of Development Rights - Through this mechanism, willing landowners sell their property's development rights to an "easement holder" such as a land trust. This was one of the recommendations made in the plan for Routt County (Colorado) to maintain the viability of agriculture in the county. The county citizens voted to approve a local ballot initiative authorizing a one-mil property tax increase for the purchase of development rights.

The town of Dunn, WI is also preserving environmentally sensitive areas from any future developments by purchasing development rights. The town recently began purchasing the development rights to permanently protect farm and open space lands from development with the help of citizen contributions. The town will be prevented from selling the development rights to a future developer by the very nature of this transaction.

Urban Forestry - The planting and maintenance of trees within a city or community is called Urban Forestry. It is an important strategy for reducing both carbon emissions and energy expenditures for urban heating and cooling. According to the August/September 1991 issue of Urban Forests magazine, "as much as 15 times the amount of carbon can be prevented from entering the atmosphere through the energy-conservation effects of an urban tree as can be retained through carbon storage alone." In addition, the studies cited indicate that energy savings from trees planted near homes and buildings range from 10 to 50 percent for cooling and from 4 to 22 percent for heating.

Planning Tools for Achieving Sustainable Community Development - Planned Unit Developments and cluster developments are one form of large site development wherein housing units are clustered together rather than evenly distributed across the landscape, so that a contiguous area of open space is preserved. This very often is the area where environmentally sensitive land is located, such as wetlands. Public facilities are also made more efficient as a result of such layout of development, as opposed to the old single-lot-by-single-lot approach. San Luis Obispo County on California's central coast uses clustering as a positive planning tool.

Performance zoning is a technique in which project specific criteria are set for such factors as noise, access to sunlight, pedestrian access, and the emission of

pollutants. This is different from the traditional, and still prevalent approach, to set zoning standards that may have limited relevance to the site or environmental conditions.

Special areas designated for case-by-case review when developers wish to proceed with projects that meet the general plan's intent for those areas that are known as special exceptions or special land use districts. This tool permits greater flexibility and promotes innovative types of projects. It maintains the integrity of the general plan, but works only when it is not abused.

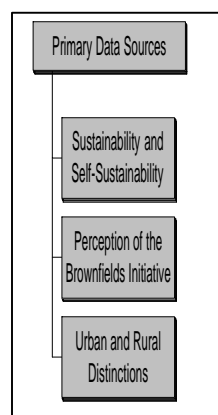
Bonus regulations allow the jurisdiction to permit higher densities, exceptions to parking requirements, or other bonuses if the project in turn provides public improvements, helps preserve open space or achieves other planning goals.

Impact fees are a systematic, comprehensive way of funding the new capital facilities required by new development. The fees are assessed against developers by a determined measurement of the impact the new development is presumed to impose on the community. The cost of new public facilities is estimated and attributed to new and existing developments in an area. A prescribed formulation allocates the appropriate proportion of the cost of each development. The community covers the costs attributable to existing developments, while developers must bear the associated costs of the new development. This method allows local governments to fund improvements where it is most appropriate and when it is most convenient.

Inclusionary Zoning requires developers building more than a specified number of housing units to set aside a certain percentage for low- and moderate-income households. The inclusion of low- and moderate-income households, in this case, is not discretionary and provides a way to fill a housing void while reducing the burden on the local government to provide for low-income families.

Subdivision regulations are a governmental tool that controls the manner in which tracts of land over a certain size may be subdivided or converted into buildable lots, and regulates the provision of infrastructure. The regulations will also stipulate what improvements must be made before building lots can be sold or building permits issued. This form of regulation often ensures the extension or provision of sewer, water, and drainage facilities, and the alignment of roads with the municipal street network.

3.2.2 Primary Data Sources – Structured Interviews with EPA and other Federal Agencies



The structured interviews proved to be the most valuable source of quality data for relating the concepts of sustainability with Brownfields redevelopment at the community and project levels. Information collected through the structured interviews with EPA, other Federal agencies, and on-site Brownfields project stakeholders was current and directly relevant to the exploratory nature of this phase of the study. Wherever feasible, declarative statements by those interviewed were validated with at least one other source familiar with the project or program.

The structured interviews focused on identifying key elements of sustainable Brownfields redevelopment and their characteristics by exploring topics in a consistent format with all officials. This approach not only helped to verify the data as it was being collected, but it also provided insights to how differently or similarly Brownfields projects and sustainability are perceived across a relatively small sampling group.

The following is a summary of key concepts and themes identified through the interview process with EPA and other Federal agency officials.

3.2.2.1 SUSTAINABILITY AND SELF-SUSTAINABILITY

In general, many conceptual interpretations of these two terms exist. The two underlying issues found were: a) where is the focus placed; and b) from where is the focus financially supported? The focus should be on how a Brownfields redevelopment can contribute to the ecological, economic, and social sustainability of the community, rather than on how to sustain the Brownfields redevelopment process. A corollary to this point is not whether the Brownfields redevelopment is sustainable, but whether the community can sustain the resulting development. Brownfields redevelopment can become self-sustainable as the primary organizational, technical, and funding resources evolve from predominantly Federal government involvement to the local government level. The goal is for ultimate evolution to a community and/or free market driven process with minimal or no Federal involvement. In either case, sustainability as it relates to Brownfields redevelopment is viewed more as an evolving continuum, with long-term closed loop self-sustainability and short-term environmentally sound economic development at the two preferred extremes.

Several officials pointed out how important it is that the elements of sustainability should enhance the Brownfields efforts and not hinder it by imposing a rigid set of requirements early on in the effort that may diminish a project's chance for success. Basically, the community must determine sustainability. What ultimately constitutes sustainable development will vary with each community. It must reflect the community's current and future values and principles, maintain involvement of the community members in order to adapt to changes, foster a sense of pride and responsibility among the residents, provide opportunities for social and economic growth, and foster improvements in the overall quality of life without impairing that quality for future generations.

3.2.2.2 PERCEPTION OF THE BROWNFIELDS INITIATIVE

Overall, the officials interviewed shared common views of the concept of Brownfields redevelopment. It should not be viewed as a component of the Federal CERCLA program for cleaning up abandoned hazardous waste sites. Rather, the redevelopment of Brownfields properties is essentially a real estate transaction and/or land development process that includes, as a critical component, the need to assess and manage the potential risk to the neighboring public and environment that any hazardous chemical contamination may pose at a site. As such, Brownfields redevelopment is a different paradigm from CERCLA and RCRA regulatory programs.

Every site is unique because of its location, extent and nature of contamination, redevelopment potential or marketability, political, and socioeconomic considerations. Site restoration requires a locally driven approach as opposed to being driven by a Federal or State agency. Due to the number of stakeholders with different objectives and the varying stages at which they become involved, implementation is no longer a single process or standardized procedure. Instead, it represents an iterative progression of an assortment of processes, occurring either in series or parallel to each other, and each requiring its own unique management capabilities, technical and financial expertise, resource requirements, and technical tools.

Brownfields should be considered as one component within the broader context of economic development since they represent viable assets to the community to create jobs, enhance the community's appearance, and counteract urban sprawl and loss of greenspace. In many cases, they represent the seeds for long-term restoration of the community's quality of life. However, a major concern expressed by several officials is that an emphasis on Brownfields redevelopment efforts should not cause a shift of existing commercial and industrial businesses from one location to a new one within the same or neighboring communities, thereby creating a new Brownfield.

Brownfields, therefore, should be addressed within a regional economic development plan as well as local municipal planning efforts. Emerging “smart growth” or “controlled growth” policies and planning initiatives, such as those in the State of Maryland, Portland, Oregon and the Twin Cities complex in Minnesota represent strategies that seek to address these issues.

3.2.2.3 DISTINCTION BETWEEN URBAN AND RURAL BROWNFIELDS

Many of the Federal officials interviewed identified the major difference between urban and rural Brownfields redevelopment programs as related to the extent of the resources available at the local government level. For the most part, rural governments do not have the organizational infrastructure that larger metropolitan governments do. Therefore, it may be beneficial for rural projects to be integrated into regional or State-coordinated strategies in order to access the broader range of full-time staff resources needed for organizing, planning, assessing, marketing, negotiating, and monitoring site restoration.

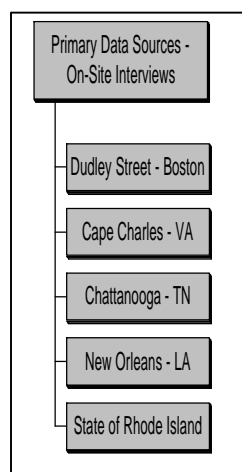
On the other hand, a few Federal officials indicated that the two types of projects are completely different; all of the important factors change between the two. Specific examples include:

- taxes are higher in the urban area;
- most cities have antiquated zoning restrictions;
- there is often less public opposition to development in rural areas;
- cost scales for development and project management in urban areas are typically higher;
- the process to get development approved is subject to more requirements in the city as opposed to the suburban fringe where it is usually a much speedier process
(and the rural “greenfield” represents the easiest and fastest of the three);

- local governments are less willing to subsidize infrastructure development in the center city, but will allow extensive local subsidy for new infrastructure development on the fringe or rural areas;
- urban sites are more vulnerable and interconnected to changes and influences in the surrounding community, which is typically less stable than rural areas, due to increased population mobility, growth, and ethnic composition; and
- urban sites are often small parcels of land that are either scattered throughout the community or in a patchwork within an existing development area.

A considerable amount of data was collected and analyzed from the structured interviews of Federal Agency officials that relates to the specific elements and characteristics of sustainable Brownfields redevelopment. These are discussed in Section 4.0 of this report. A detailed summary of EPA and Other Federal Agency Data Sources is included as Appendix E.

3.2.3 *Primary Data Sources – Structured Interviews with On-Site Municipal Officials and Project Stakeholders*



Structured interviews were conducted with a variety of stakeholders from four ongoing EPA Pilot Projects and one ongoing Brownfields redevelopment that is not part of the EPA initiative. The stakeholders interviewed onsite represent a cross-section of municipal officials, community leaders, private developers, and others that have key roles in local redevelopment efforts. The following summaries are presented by municipality and highlight major concepts and themes that are not incorporated into the discussion of specific parameters, elements and characteristics presented in Section 4.0. A detailed summary of the on-site interviews for each project can be found in Appendix F.

3.2.3.1 **THE BROWNFIELDS ECONOMIC REDEVELOPMENT INITIATIVE'S (BERI) DUDLEY STREET NEIGHBORHOOD REDEVELOPMENT, BOSTON, MASSACHUSETTS**

The primary focus of Boston's BERI is the Dudley Street Neighborhood. There are over 1,300 vacant lots in the neighborhood; accounting for 9% of the State's listed contaminated sites. The Pilot Project's objective is to address these Brownfields as part of a multi-dimensional revitalization strategy for the Dudley St. neighborhood. The EPA Pilot Project Grant was awarded in September of 1995.

The Dudley Street corridor is a major urban thoroughfare running through the Roxbury section of Boston to Dorchester. Roxbury and Dorchester have borne the brunt of Brownfields creation during the past 20 years. The overall vision for this redevelopment was the creation of a "Dudley Urban Village" – a self-sustainable community within the city. To achieve this vision, the Boston Brownfield Partnership Task Force was created. It is the primary organizational body responsible for planning, coordinating, and implementing the redevelopment process. The BERI Task Force is a public/private partnership between the City, the Boston Redevelopment Authority and several diverse neighborhood organizations; and is coordinated by a member of the City's Environment Department.

Sustainability – Several respondents agreed that a project is sustainable if it satisfies the goals and criteria that the community defines for it. The focus on sustainability in Boston has been limited primarily to completing site assessments and preparing the individual sites for the next phase of redevelopment, and encouraging redevelopment ideally by a closed-loop type of sustainable industry or at the very least by environmentally conscientious businesses. The greatest barrier that BERI encountered to achieving their sustainability goals was obtaining private property owners' participation in the Brownfields project. Without private owner participation, sites could not be properly assessed for environmental contamination and integrated into community planning efforts. Hence, efforts to identify sustainable industries were also impeded. The resulting opinion of most respondents was that, although privately owned Brownfields have the same potential to

contribute to sustainable redevelopment in the community, the likelihood of success is much less than with publicly owned properties.

Perception of the Brownfields Redevelopment Concept – The Brownfields process is seen as an open forum for providing private property owners and developers with advice and technical assistance from the community and regulatory agencies. As such, it is not considered a process as much as it is a “tool kit” from which needed information and resources can be obtained through community leverage. In Boston’s case unfortunately, some private property owners either would not respond or were unwilling to participate with BERI. In another point, members of the community apparently developed a misconception of Brownfields and created unrealistic expectations of what the Pilot Project could accomplish. This emphasizes the importance of providing effective community outreach and education early on in the project.

The respondents all emphasized the importance of empowered leadership in sustaining a Brownfields redevelopment project. They recommended centralized control of the project under a local public/private partnership or non-profit organization. If the local municipality must take the lead, the municipal project coordinator should be designated at the office director level and located within the economic development section of the local government, be given a clear mandate and authority for decision-making and expenditure of public grant funds, and receive the full commitment and support of the local government.

The Pilot Project also demonstrated the importance of community involvement in formulating a common vision for the neighborhood and in obtaining community acceptance of projects. In addition, it pointed out the essential requirement to provide public education to community members early in the project. This enables the community to understand the nature of risks posed by chemical contamination and technical aspects of site assessment and cleanup processes. It also makes them

aware of how the real estate development process occurs, what the role of the coordinating organization is, and the constraints and economic forces at work on the project. Without a proper understanding of these factors, community participation can actually hinder progress.

3.2.3.2 THE PORT OF CAPE CHARLES SUSTAINABLE TECHNOLOGIES PARK, TOWN OF CAPE CHARLES AND NORTHAMPTON COUNTY, VA

The Pilot Project site is the Port of Cape Charles Sustainable Technologies Industrial Park (STIP). This site is proposed for the town of Cape Charles, VA as a means of creating sustainable economic development for this rural community and the County of Northampton as a whole. The Brownfields Pilot Project Grant was awarded in September of 1995. This project has been selected by the President's Council on Sustainable Development as a demonstration project.

Much of the Brownfields site is a former refuse dump, railroad yard, and abandoned industrial operations area. A Phase I survey has been completed.

The master plan for the redevelopment includes creation of operating standards for the STIP that have been embodied in a set of covenants recently approved by the town council. The Town of Cape Charles has acquired part of the land designated for redevelopment, a portion of which is leased to the Industrial Development Authority for use as the first phase of the project, which is the eco-industrial park. On completion, the park will become part of a larger redevelopment project that includes expanding the eco-industrial park itself, a restored wetland area and nature trail, an environmental education facility, and a tertiary sewage treatment facility. Additional development of a recreation area, including the potential construction of golf courses, and a residential condominium is planned for an adjacent site. A companion development along a strip of underutilized retail and commercial buildings on the main street of the city is also anticipated.

All the local stakeholders interviewed in the Cape Charles community were participants in a community-based charrette designed to formulate a new vision for the region and citizen commitment to sustainable development. As a result, all the respondents shared common perspectives regarding sustainable Brownfields redevelopment.

Sustainability – The concept of sustainable development is seen as a goal oriented process, rather than a desired outcome, in which it does not matter what parameter is emphasized – ecological, economic or social – as long as development efforts strive for all three parameters to converge. Thereby, sustainability is the preferred direction in which the development efforts evolve; is based on community values; and is driven by a vision, a plan, and the people of the community. In this concept, what is actually completed is less important than the manner in which it is accomplished. The underlying principle is: “Does it make sense for the community?” (Harris, 1998).

Based on this concept, sustainable development doesn’t necessarily mean replacing defunct industries with high tech businesses. A low-tech business may be preferred if it matches the needs of the local labor force. The objective is to develop a diversified economy, matched to the workforce, which can provide challenging opportunities to promote workforce growth, both in terms of numbers and knowledge levels.

Perception of the Brownfields Redevelopment Concept – Brownfields redevelopment is perceived as part of an economic development process that is just one component of an overall community improvement strategy. The key to the process is to view the risks as shared community responsibilities for addressing problems as opposed to one-sided liabilities. To accomplish this, the respondents believe stakeholders must avoid categorizing issues, problems, and tasks, and instead,

consider them as part of a holistic approach to a restoration process. This strategy should also include cooperation among organizations and jurisdictions by focusing on how to make the project succeed rather than whose jurisdiction or responsibility an issue may be. The Cape Charles community found multiple ways to promote this cooperation. They have integrated local Brownfields redevelopment plans with comprehensive master plans for the town, county and region. A common vision and commitment have been promoted through community meetings and task force charrettes. They have also combined town and county owned land to create a groundbreaking, eco-industrial park that features state-of-the-art, solar technology manufacturing; not only as its anchor industry, but also by incorporating the company's solar panel technology into the facility design itself.

In the case of Cape Charles, the initial redevelopment process began with an Enterprise Community effort focused on economic development – not Brownfields redevelopment. The community created an Enterprise Community Strategic Plan that included an emphasis on sustainable economic development. The plan did not try to meet the abstract definition of sustainability. Instead, sustainability concepts and an environmental consciousness were integrated into the planning process. The Brownfields component was added afterwards. The impetus that initiated the process, and sustains the momentum today, is recognition by both new and longtime residents of the poor economic condition throughout the community and the threat this condition poses to the lifestyles of all the residents.

Each of the respondents expressed concerns that limited staff resources and funding pose the greatest barriers to this rural community's Brownfields redevelopment efforts. The majority of the work accomplished by the community to date has been due to leveraging of various Federal and State grants. However, restrictions on how each of the grants can be used, timeframes associated with grant spending, and the minimal amounts of funding are limitations still facing the project. The respondents

agree that public funding must transition to private financing in order to continue with future phases of the project as planned.

3.2.3.3 SUSTAINABLE REDEVELOPMENT OF THE URBAN CORE OF A MID-SIZED CITY, CHATTANOOGA, TN

The current development project dates back to a 1982 initiative to redevelop the downtown and riverfront areas of the city. The initial concern was a growing problem with poor air quality in the region, a deteriorating downtown core district, and lack of public access to the river for recreation. The original development initiative was combined with a 1986 initiative aimed at the elimination of all substandard housing in the city within ten years.

The first redevelopment effort was concentrated along the riverfront of the city and is part of a larger 22-mile riverfront greenway plan. With substantial progress on the waterfront development already completed, the recent focus is on redevelopment of a 640-acre tract on the south side of the city core. The intention is to turn this area into an urban redevelopment zone. But, the planners want to avoid the "condemn and bulldoze" variety of development. The intention is to develop the area in line with a mixed-use plan that emphasizes reuse of existing structures wherever possible. Another important concept is that there will be no municipal taking of owner occupied housing. The plan is to work with residents to encourage them to stay in the neighborhood.

Brownfields redevelopment is a part of this latest development initiative. Two particular sites that are demonstrating unique approaches to Brownfields redevelopment are located in or near the southside development and the riverfront development. The Foundry Site, a 100-year old industrial site with soil and subsurface contamination, is preserving the historic architectural character of the

plant while integrating remedial technology into the design of the new development – a football stadium and parking lot. The Cavalier Development project, formerly the city's largest multi-parcel industrial site, is exploring innovative ideas in land ownership, use, and financing.

The study team also looked at the Volunteer Army Ammunition Base, located just outside of the City, which is currently undergoing realignment and partial closure under the DOD's Base Realignment and Closure (BRAC) Program. This site has unique issues, elements and characteristics that are associated with Brownfields, as well as sustainable development.

It is interesting to note that the level of sustainable redevelopment achieved so far by the City of Chattanooga has taken over 16 years to accomplish. The progress and timeframes required for Chattanooga's accomplishments may warrant consideration by other communities initiating an EPA Pilot Project within the brief two-year period of the Pilot Project grant. The Chattanooga Brownfields redevelopment effort could serve as a guide in developing realistic expectations of what level of progress can be achieved within certain timeframes.

Sustainability – The planning and redevelopment efforts in Chattanooga have not sought to adhere to a strict outline for sustainability, but rather, have sought to learn from the past and ensure that what is done today makes sense for future generations. For instance, the initial success of one project becomes the selling point to help launch future projects. Based on this experience, the respondents identified several key characteristics of sustainable redevelopment that will be discussed further in Section 4.2. Generally, these include: preserving the natural assets of the region as the anchor for future growth; designing and building for permanence so structures can easily be reused; and, sharing of resources and creating links of dependency among the community components – organizations, businesses, infrastructure, and green or open spaces. These links of dependency between businesses, people and

places will provide incentive to remain in a community, thereby increasing local stability and the capability to adjust to changing market conditions, new technology, and unfavorable costs.

Perception of the Brownfields Redevelopment Concept – Essentially, the respondents view Brownfields as a social education issue. The community as a whole needs to gain a better understanding of the cause-and-effect interrelationships within the community, the region, and on the broader scale. This requires an investment of time and money to educate the public and to recruit or retain its knowledge base. Several critical elements need to be included in this education. One must take into account the actual risks from pollution and how Brownfields transcend environmental issues to impact the community both economically and socially. There may be liability for property owners and a fear of the public taking of land. There will also be a critical need for the private sector to take the lead in Brownfields redevelopment.

Hence, Brownfields should not be viewed as a single issue or process, but as part of a larger perspective and multiple processes. Decisions need to focus on the dynamics of these processes overall and not become departmentalized. If every neighborhood in the community, and every community in the region, is encouraging similar industrial development, then competition is created that results in industries constantly moving to the next advantageous location - leaving Brownfields behind.

The riverfront redevelopment effort contributed to the overall city development, but it was not intended to compete with the development of the downtown district. Since the planned growth in the city was primarily internal (not dependent on suburban businesses moving in) there was concern that building on the riverfront might attract tenants from the adjacent downtown core where the existing office and commercial centers are presently located. This would have the potential to create more abandoned or underutilized properties downtown. Through zoning changes, the city was able to enforce

recreational uses for the waterfront area, thus not detracting from office and commercial development in the core.

There were several common themes inherent to each of Chattanooga's redevelopment projects. There was focus on the river as a key natural resource and reusing facilities as assets. Site contamination problems were addressed as part of the reuse design. The promotion of regional development that does not create detrimental competition was achieved. There was leveraging of public and private financing. Finally, and maybe most important, a solid commitment by community leaders to achieve their vision of the community was met.

3.2.3.4 **BROWNFIELDS SITE INVENTORY AND COMPREHENSIVE PLANNING – NEW ORLEANS, LA**

The primary focus of the City of New Orleans' Brownfields program is to leverage the EPA Pilot Project. This can be done in several ways including generating public awareness of Brownfields; creating a community organization to identify, categorize, and prioritize Brownfields sites within the city; and ensuring redevelopment of the sites is consistent with comprehensive strategic plans for economic development. This effort is part of a larger effort intended to stimulate new jobs and improve the environmental quality of socioeconomically disadvantaged communities. The Brownfields Pilot Project Grant was awarded in September 1995.

The project was proposed as a means of developing an inventory of Brownfields to be used in reclaiming land for industrial or business use. The effort includes the development of criteria for ranking the sites in terms of their economic development potential. A community outreach plan has been developed and implemented for the purpose of obtaining neighborhood input to the process of site identification and ranking.

The New Orleans Brownfields initiative is among the first of several major projects begun after the formation of the Mayor's Office of Environmental Affairs, within the Department of Economic Development. The Office of Environmental Affairs was established at the urging of the Mayor and has a strong commitment from the city management.

The formation of the New Orleans Brownfields Inventory Consortium was the initial step in getting the project started. The authority for the Consortium is a charter by the Mayor to operate through the Mayor's Office of Environmental Affairs. The Consortium is comprised of a diverse representation of community stakeholders from neighborhoods, churches and synagogues, academic and financial institutions, the private business sector, and municipal leaders. Each neighborhood elected a representative to serve on the Consortium. Ground rules were developed for how the Consortium would operate, including weighting criteria applied to different stakeholders and the selection of delegates with voting privileges.

Sustainability - A primary concern expressed by several respondents was that for Brownfields redevelopment to be sustainable it had to be part of a comprehensive and continuous community involvement and improvement process. The focus on the planning process itself, rather than plan output, is considered key to the project's sustainability because it involves the community's inhabitants. Thus, the plans are able to evolve and adapt as the community changes over time. On the other hand, it was pointed out that community involvement can become a barrier to the process. This occurs because the organization typically deals with and responds to the segments of the community that are most vocal. This does not always provide a true picture of community needs, desires, and values.

Another concern expressed by some of the respondents pertained to the city's ability to financially sustain the Consortium; and the administrative support needed by the Consortium to continue the community outreach, involvement, reporting, and planning activities once the EPA Pilot Project grant ends. A viable long-term funding mechanism has not yet been identified.

Perception of the Brownfields Redevelopment Concept - The Mayor's Office of Economic Development sees Brownfields as a critical part of the overall redevelopment of the city. The first priority is to sustain the viability of the city as the core of a regional economy and society. Therefore, the Brownfields program serves as an incentive to focus on infill redevelopment.

Environmental justice is a major issue in New Orleans. Respondents stated that socio-economically-distressed minority neighborhoods are overburdened with environmental contamination problems due to the city's history as an industrial and transportation center. Addressing environmental justice becomes a question of how to respond to cleanup problems and to prevent future contaminated neighborhoods. As such, redevelopment of Brownfields is not viewed so much as a process, but as a focal point for community motivation and planning within an overall community cleanup, restoration, and economic development effort.

From a developer's perspective, it was noted that the interest and motivation to redevelop a Brownfields site is based on its profit potential, as would be the case with any other real estate development project. The developer would be interested in a site despite its Brownfields status, not necessarily because of its Brownfields status. Therefore, a key incentive to sustainable redevelopment is determining how the Brownfields program can demonstrate that it has added value to a site. In other words, what does the Brownfields initiative bring to the table that wasn't there before?

3.2.3.4 SITE INVENTORY, CHARACTERIZATION, AND DEVELOPMENT POTENTIAL FOR COMMUNITIES IN THE WOONASQUATUCKET AND BLACKSTONE WATERSHEDS, STATE OF RHODE ISLAND

The goal of this EPA Brownfields Pilot Project is to return under-used contaminated properties to productive use, with particular emphasis on the reuse or recycling of the multiple abandoned mill sites and structures found along the Woonasquatucket and Blackstone Rivers. Due to the geographical size of the project area, and because multiple rural municipalities and urban cities are involved, the State of Rhode Island's Department of Environmental Management has the lead in project coordination. The structured interviews focused on particular sites within the city of Providence that are part of a proposed plan to create a greenway along the Woonasquatucket River. The Brownfields Pilot Grant was awarded in June 1996.

An objective of the Pilot Project is to create a model plan to identify and characterize sites for contamination and market potential. The strategy developed will allow for accurate determination of present levels of contamination and accurate estimates of the associated cleanup costs. When completed, the strategy will represent a transferable model for site characterization and remediation that could be used by other communities. The project is also attempting to leverage additional resources and support to continue to address Brownfields redevelopment in the affected communities within the two watershed areas.

Sustainability – Because the project was led by the State agency, it represented an opportunity to try a broad strategy for sustainable redevelopment of Brownfields sites. With the project focus on mill sites located predominantly within two watersheds, an ecosystem-based approach was employed. One site that keyed on the river as an anchor asset, if properly managed, could become a catalyst for sustainable redevelopment of adjacent neighborhoods and make them places people

would want to live again. Another site's vision was to develop a waterfront park through the city that provides jobs, natural beauty, recreation, and restoration of the watershed ecosystem.

The State, municipal and non-profit organizations participating in the project are operating primarily on various grant funds. Therefore, they are required to juggle a number of project variables to meet differing timeframes, budgets, and activity restrictions of the grants. This limited basis of funding currently hampers the sustainability of the Brownfields redevelopment effort. However, recent State legislation has created two revolving funds that can support sustainable redevelopment in the future.

Perception of the Brownfields Redevelopment Concept – The Brownfields initiative is viewed as an impetus to community development. It consists of major elements, each having their own systems and processes that vary on a site-by-site and community-by-community basis.

One mechanism for the initialization of a project is to start by building a connection to the urban community. Identifying central issue groups that already have connections to the community can be useful in terms of developing an identity and establishing the proposed project's credibility with the community. The Brownfields initiative can be integrated into the larger plan/agenda of these local groups. The project focus can then be addressed with these groups to make use of group meetings and networks that are already established, thereby not imposing additional demands on residents' time and commitment.

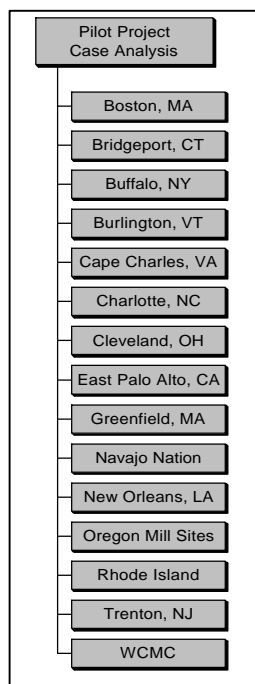
When municipalities undertake the process of identifying and prioritizing Brownfields properties for redevelopment, site ownership is a critical criterion. The ideal Brownfields site has no private owner, or can easily be taken over by the

municipality. This municipal control significantly increases the potential flexibility needed to characterize, market, and direct the redevelopment of the site.

Urban versus Rural Brownfields Redevelopment – Two basic characteristics were identified by the respondents. Rural municipalities generally lack the resources needed to undertake a concerted effort to address Brownfields sites all at once. Although rural municipality planning departments may exist, they typically do not have the resources or expertise to address economic development and environmental contamination issues associated with Brownfields. Regional, State and Federal agencies are needed to augment the rural communities with technical expertise, staff resources, and funding.

Also, members of rural communities generally have a good understanding and appreciation for natural resources, such as rivers and greenways, as public assets. Whereas in urban communities, especially in socio-economically distressed neighborhoods, special outreach and public awareness campaigns are needed that promote the values of such assets and are geared to reach the multitude and diversity of the population.

324 ***Brownfields Pilot Project Case Analysis***



As part of the information gathering phase of this project, 15 Brownfields Pilot Projects were selected from the total of 115 projects awarded either national or regional grants by the EPA prior to November, 1997. Since that time, the total number of pilot projects has increased to 157. These sites were the subject of a more extensive review, based primarily on available information about the projects contained in EPA's Brownfields Information Management System, or materials produced and published by the projects themselves. Of the 15 Pilot Projects selected for further review, four were also the subject of on site visits to interview project personnel and collect additional information available from secondary sources.

These four projects (Boston, MA; Cape Charles, VA; New Orleans, LA; the State of Rhode Island) along with the eleven other sites are summarized briefly in the following Sections. A more detailed summary is provided in Appendix C. A summary of the interviews conducted during the on-site visits is provided in Appendix F.

3.2.4.1 BOSTON, MASSACHUSETTS

The city of Boston is a major industrial center and seaport with a metropolitan area population of 575,000 of which, approximately 43% are minority and 18.7% are living at or below the poverty level. The focus of the project is the Dudley Street neighborhood, which is known to contain some 1300 vacant (and potentially contaminated) lots, of which six properties were targeted. The EPA has already spent over \$1 million at one of the sites (Modern Electroplating) to conduct a removal action. A site assessment is necessary to estimate the remaining costs of cleanup. Phase I and Phase II assessments have been either completed or are in progress at two of the other sites. Less than cooperative site owners have complicated the process of obtaining additional information about the actual hazards posed by the sites.

The Pilot program conducted community outreach meetings to educate the local population and solicit input on future site uses. The Dudley Street Initiative and a number of other community groups are working with the Brownfields Economic Redevelopment Initiative to provide a forum for minority and other community participation. The Pilot has developed information for a Geographic Information System (GIS) on five of the sites. Qualitative assessments have been made for the marketability of some of the sites based on location, presence of loading docks, availability of transportation, condition of existing structures on the properties, amount of available land associated with

the site, and proximity to waterfront areas and wetlands. Interested developers have been identified for some of the sites, and are making presentations on proposed redevelopment alternatives to neighborhood groups.

3.2.4.2 BRIDGEPORT, CONNECTICUT

Bridgeport, with a population of 132,919, is the largest and most distressed city in the State, experiencing an almost 50% decrease in manufacturing jobs over the past decade. The citywide unemployment rate is 8.6%. Significant suburban greenfields development has occurred leaving prime, inner-city industrial real estate abandoned. The objective is to return contaminated inner city, derelict land to productive use and create a prototype for other cities. All tasks under the original Pilot Work Plan have been completed.

A site inventory of 205 priority ranked sites was prepared; six of these sites have been targeted for concentrated attention with one site already planned for use as an indoor ice-rink, ballpark, and a new museum. The city is involving the local community in the Brownfields decision making process. The planning process also includes "Team Bridgeport," a group appointed to develop a State action plan for the redevelopment of the city. Approximately 12 companies have expressed interest in sites the city has identified as having economic development potential. Estimates are that approximately 200 jobs have been created thus far, but since no facility is as yet operational, there is no increase in the property tax base.

3.2.4.3 BUFFALO, NEW YORK

Buffalo is a typical northeastern city with a long history of dealing with hazardous waste issues (30 sites on the NYS List, 60 sites on CERCLIS, and several Brownfields sites along water bodies). HUD ranked the city as the 4th most distressed in the United States. With a resident population of 328,000, Buffalo's poverty rate is about 25%. The Pilot has focused on: developing a city-wide master

list of potential Brownfields properties; prioritizing and assessing 10-20 sites from a preliminary inventory of 100; creating a GIS database of site information; and preparing a Brownfields Redevelopment Manual, Community Outreach Plan, Developer Workshop/Showcase, and a redevelopment plan for South Buffalo.

The Buffalo Brownfields Task Force (chartered by the Mayor) includes participation from government, private industry, and general public entities in spearheading this diverse and progressive Pilot. The Pilot has leveraged a variety of Federal HUD EZ/EC & NYS EDZ grants, donations from local Development Corporations, and private company investments. As of 1998, 100 sites have been identified and screened. Eleven sites have Phase I assessments underway or completed. The City Planning Department is creating comprehensive development plans to integrate new business development with recreational and greenspace areas. Redevelopment strategies and approaches are tailored to the specific qualities and location of each site. A unique "First Source Agreement" requires businesses receiving city assistance to give first hiring consideration to local residents. The city also has agreements with new industry and other private redevelopments to maximize the hiring of women and minority subcontractors.

3.2.4.4 BURLINGTON, VERMONT

With a population of 39,127, Burlington is among the poorest cities in Vermont (about 19% below poverty) and has been designated as a Federal Urban Enterprise Community. The Pilot targets 17 properties consisting of 40 acres of land within a 3-mile radius of Burlington's central business district. Most of the sites are in or near disadvantaged neighborhoods. The Pilot's goal is to develop an integrated approach that incorporates ecological zoning strategies, pollution prevention, and sustainable development. The emphasis is on creating a transportation corridor between the city core and its waterfront, cleaning-up and redeveloping the waterfront, and

creating an eco-industrial park at the largest urban site. The objectives of the project include developing a comprehensive Brownfields Plan, achieving a high degree of citizen participation and support, and creating a redevelopment model for other small cities to replicate. The project is also pursuing a DOE research grant to evaluate innovative technologies such as a prototype high-strength waste-to-product technology process such as fish food and fertilizer manufacturing, and is researching bioshelter design and construction and value-added food production.

The Project Coordinator works for the City's Community and Economic Development Office, and coordinates with an advisory committee task force and contracted firms to help identify marketable properties, strategies, and potential purchasers. The city is addressing private developer fears over liability by using various municipal instruments to acquire Brownfields sites, clean them up, then sell or lease them back to private developers. In addition, deed restrictions, environmental covenants, and good site management practices are employed. The city plans to involve disadvantaged neighborhood citizens in all stages of the planning process allowing the community to assess the level of risk they are willing to accept. The community will also participate in determining any future land use options. The city relies heavily on community advisory groups (e.g., the Barge Canal Coordinating Committee), local business associations, and local neighborhood planning assemblies to maintain public awareness of issues and to identify alternatives.

3.2.4.5 CAPE CHARLES, VIRGINIA

The Town of Cape Charles is located on the southern tip of Virginia's Eastern Shore on a narrow strip of land between the Chesapeake Bay and the Atlantic Ocean. A small community, Cape Charles has a population of 13,000, 47% of which are African-American with 27% below poverty level. The Pilot targets a 155-acre site that includes a former dump, a railyard site and the remains of abandoned industrial

operations. The goal of the Pilot is to assess the extent of contamination at the site and to design a remediation strategy that will allow for the creation of the Cape Charles Sustainable Technologies Industrial Park (STIP), a restored wetlands, a nature trail, an environmental education facility, and a tertiary sewage treatment system. Phase I surveys are completed and Phase II investigations are planned to determine the extent of any contamination at the site.

The design of the project was developed through a consensus building effort and an architectural design charrette, or interactive workshop process. Participation from minority and low-income populations within the community was emphasized. The first tenant for the proposed STIP has been identified. The jobs being offered will increase the individual earnings potential of many local residents. Other efforts by the Pilot at the site include managing some of the adjacent coastal marshes and dunes as a habitat preserve for selected endangered species, and the restoration of wetlands to add to the attractiveness, usefulness, and overall sustainability of the proposed project. The Pilot has developed a Master Plan and Comprehensive Design and Operations Standards for the STIP. Based on these documents, the Cape Charles Planning Commission adopted a new STIP zone and the town council has rezoned the property.

3.2.4.6 CHARLOTTE, NORTH CAROLINA

The city of Charlotte is an urban center with a population of 395,934, approximately 34% of which are minority, with 10.8% living at or below the poverty level. The proposed project target includes the city's oldest industrial area, the South End/Wilmore district, parts of which date to the latter portion of the 19th century. The goal of the project is to return properties to productive use. The city is establishing guidelines for appropriate cleanup levels on selected sites. Although physical improvements have been made to the target area in the form of private

redevelopment of several mills to retail, entertainment, or residential uses; a number of sites remain to be redeveloped.

A core site team consisting of representatives from four neighborhood associations, as well as other stakeholders, participated in the site selection process. The Pilot Project's Environmental Committee developed the criteria for selecting sites and determining the amount of funding for site activity. The community has sought to avoid creating a list of Brownfields sites for fear of the potential stigma the sites may attract, thereby inhibiting the site marketing. Already redeveloped textile mills and factory sites have been used for restaurant and retail space, upscale housing and a working trolley line. Other sites will be purchased for use as flex space or to expand existing manufacturing facilities, office and recreational space. Grant funds have been used to negotiate a final agreement for one site, the first such agreement under the State's new Brownfields Act. The developer will spend \$14.5 million on the site, creating approximately 400 jobs.

3.2.4.7 CLEVELAND, OHIO

The Cleveland Pilot was the first Pilot grant awarded by the EPA. Cleveland is located in north central Ohio on the shores of Lake Erie and is Ohio's second largest city with a population of over 490,000 in the urban center and surrounding areas. There is extensive industrial and commercial development throughout the city. A total of four sites has been identified as part of the Pilot. The objective is to prepare for the future reuse of the chosen sites, to ensure that decisions about cleanup and redevelopment are consistent with the needs and expectations of the community, and to ensure that minorities and the disadvantaged are able to participate in the Brownfields redevelopment efforts.

The Cuyahoga County Planning Commission (CPC), working with the Cuyahoga Community College (Tri-C), has formed a community/business task force, to ensure broad participation. Together this task force has: held a forum to discuss risks posed by Brownfields; assisted with the development of high school curricula on environmental issues; initiated the development of programs to provide trained capable workers to support Brownfields redevelopment efforts; and conducted outreach activities to recruit and train inner-city residents to perform work needed to remediate Brownfields sites. The project efforts have been successful in attracting several new businesses to the area, producing additional employment and tax revenue for the city. In addition, an extensive GIS database has been developed to provide developers, lenders, and others with comprehensive profiles of sites throughout the region.

3.2.4.8 EAST PALO ALTO, CALIFORNIA

East Palo Alto is an ethnically diverse community with a population of 25,000 living within a 2.5 square mile area. According to the 1990 census, the local population is approximately 86% minority. The city was incorporated in 1983, but it inherited an inadequate infrastructure, low sales and property tax revenues, no central business district and a total of 166 acres of Brownfields areas. The Pilot goal is to redevelop a large portion of the 130-acre Ravenswood Industrial Area, create new job opportunities for residents, and increase the city's tax base, thereby improving community services. The Region IX EPA office and the U.S. Department of Housing and Urban Development have joined together to provide Federal staff liaisons to work with Brownfields and other economic development issues. They will conduct community outreach and education meetings and coordinate Federal and State programs to meet city needs. They will also identify assistance programs for which the city qualifies.

The Ravenswood Industrial Area is made up of 59 properties that overlook a wetlands area and the San Francisco Bay. East Palo Alto is working with the California Regional Water Quality Control Board to conduct a screening level investigation of soil and groundwater contamination associated with the site. The Pilot has also established the Ravenswood Industrial Stakeholders Group to develop land use and alternative redevelopment scenarios, and define a process for implementing the redevelopment plan. The Pilot has plans to hold at least three seminars for community personnel designed to inform residents about environmental factors affecting their neighborhoods. Students from Palo Alto have also participated in a job-training program including 90 days of on-the-job training with a local environmental company. Potential full-time jobs are available for some of these students. Attempts are being made to increase outreach efforts to potential employers in the South Bay area, and to expand this training program for the area surrounding the site.

3.2.4.9 GREENFIELD, MASSACHUSETTS

Greenfield is a small community with a total population of 18,026. The town has an unemployment rate of about 5.4% and has been designated as an Economic Target Area by the Commonwealth of Massachusetts. The town has experienced a 37% loss in manufacturing jobs between 1980 and 1990. The Pilot Project is focused on an abandoned 145,000-sq. ft. machine tool manufacturing plant covering 13 acres along the Green River. The goal of the project is to evaluate the environmental concerns at the site; explore an innovative cooperative model for site assessment; create redevelopment opportunities; and plan for the restoration of the site as an asset to a blighted neighborhood.

The project will develop a cooperative partnership among the local government, State environmental agencies, private consultants, and students from the University of Massachusetts. Activities planned as part of this Pilot include site

investigation and remedial planning and determining future land-use options for the site. Several possible uses for the site include a cultural center, office space, and a cultural museum. The project is focused on developing model approaches to reducing assessment and cleanup costs that could be replicated for other Pilots. Redevelopment of the site could provide needed space for local business expansion.

3.2.4.10 THE NAVAJO NATION

The Navajo Nation site is located in a rural section of northwest New Mexico. The area has approximately 2,293 residents who are predominantly of Native American ancestry. About half the area population is impoverished with few local employment options. The Pilot focuses on a 10.5-acre property containing the former Navajo Forest Product Industries. The mill complex shut down in 1995 resulting in loss of 300 jobs and annual sales over \$20 million. The site contains 32 buildings, hazardous and solid waste problem areas including PCB-contaminated transformers, capacitors and stained soil; discarded batteries; barrels of acids, solvents and petroleum products; and a wash trough with unidentified solvent. The Pilot objectives are to identify all hazardous substances on-site and in the groundwater; assess public health and environmental risks; educate the community; develop a remedial design; and cleanup and revitalize the industrial complex.

The Pilot is managed by the Navajo Nation Environmental Protection Agency in close cooperation with the Federal EPA Region IX. A full-time Pilot Project Coordinator has been hired. When tribal general funds are obtained, The Navajo Nation is planning a voluntary cleanup program, removal response at the site. Pilot funding will be used for site assessment and developing a remedial design plan. The Navajo Nation is considering a lease of all or part of the complex to a regional lumber milling company that will operate under a new 10-Year Forest Management Plan. A community outreach effort is underway to

identify local community needs and concerns through an education campaign conducted in the Navajo language. All project activities are being led and conducted by tribal members. Local residents will be trained by USEPA to conduct site assessment and hazardous waste site cleanup.

3.2.4.11 NEW ORLEANS, LOUISIANA

New Orleans is noted for its cultural diversity with 65% of its more than 480,000 population composed of residents with African American heritage. The city is located adjacent to two major waterways, at the foot of the "chemical corridor." Its port, rail, and highway systems transport a high volume of hazardous materials. Since 1990, the city has emphasized economic development planning to revitalize major sections of the city and its neighborhoods. The Pilot goal is to develop an inventory of Brownfields sites in the city to aid city planners, developers and investors in restoring the properties. The immediate objectives are to identify sites; develop criteria to rank the sites in terms of economic redevelopment potential; develop a basic cleanup process; and generate redevelopment strategies for 5 to 10 of these sites. The Brownfields program is coordinated with the city's other economic development activities through the Office of Environmental Affairs (OEA) which also chairs the Brownfields Consortium, a broad representation of state/city agencies, bankers, developers, and citizen groups. A professional facilitator coordinates the day-to-day activities and meetings of the Consortium.

Through a series of community meetings and surveys of city public works components, 167 potential Brownfields sites were identified and screened. The Pilot used EPA's mobile analytical lab to expedite Phase II field characterization for selected properties. The Brownfields inventory and redevelopment strategy will be integrated into a comprehensive city Master Policy Plan and a subset Strategic Policy Plan, to provide a framework to direct and guide future development. The OEA and Brownfields Consortium have also developed a draft Brownfields Marketing Plan that outlines five phases of plans and activities

for 1) community participation; 2) stakeholder involvement; 3) "collaterals" or information management and presentation; 4) marketing initiatives; and 5) public relations. A variety of possible reuses will be considered based on community involvement and property owner, developer, and lender discussions. Two sites are being considered by developers for residential or low-income housing.

3.2.4.12 OREGON MILL SITES

This rural area Pilot targets nine abandoned mill sites located in nine different towns in Oregon, with a combined coverage of 550 acres. Since 1988, cutbacks and closures of lumber and wood product facilities in primarily timber-dependant rural communities have economically devastated these areas by depressing mill property values, reducing the tax base, creating abandoned infrastructure, decreasing family incomes, and increasing the focus on greenfields development. The objective of the Pilot is to rehabilitate the vacant and abandoned mills into productive industrial and commercial properties that will enable surrounding communities to attract businesses that bring new and diverse employment opportunities.

The project organization is a public/private partnership managed by a non-profit corporation under the overall coordination of the State Economic Development Department. A project advisory committee has been formed with representatives from the partnership groups as well as others with particular expertise. Local Action Committees (LAC) are responsible for redevelopment plans tailored to each site that consider land use, wetland mitigation, cleanup, and redevelopment incentives. Each LAC creates outreach plans to ensure broad community input to cleanup and redevelopment efforts. Most sites have completed Phase I and Phase II assessments combined with wetlands delineations. The project is emphasizing community awareness programs to address risk communication with local citizens. The project is also evaluating

the potential for using generic cleanup options to help developers assess cleanup liability, financing options and development risks; and to establish cleanup standards for similar abandoned mill sites.

3.2.4.13 THE STATE OF RHODE ISLAND

This project incorporates two urban cities and three rural towns in the north-central portion of the State that historically have been economically centered around industrial mills located along the region's rivers. After decades of heavy industrial use, followed by a rapid decline in mill industries, many contaminated properties are left to decay. The focus of the project is on 50 potential Brownfields sites located in multiple communities within the watersheds of the Woonasquatucket and Blackstone Rivers. The goal is to create a model ecosystem-based program to return sites in these communities to beneficial use. Objectives include coordination with multiple State and local agencies, providing a degree of certainty in levels of contamination, and the leveraging of additional resources for redevelopment. Because most of the affected communities have only minimal organizational infrastructure, the Rhode Island Department of Environmental Management (RIDEM) has the responsibility for coordination and implementation.

A regional survey was conducted for the five municipalities resulting in the nomination of 120 sites as potential Brownfields. Based on Phase I data and other site characteristics such as community concerns, environmental threats, and potential reuse, this list was screened to produce a final list of target sites. The key to this process is regional coordination to identify, screen, and prioritize sites. RIDEM is working with established community action groups to involve the local communities in the planning and decision processes. The project is taking an ecosystem management approach to redevelopment within the watershed. The focus is on creating employment opportunities and upgraded affordable housing for low income residents in Brownfields neighborhoods.

3.2.4.14 TRENTON, NEW JERSEY

The city of Trenton, located in west central New Jersey, was a prominent 20th century manufacturing center that has greatly declined, leaving a large number of potential Brownfields sites. Unemployment levels have ranged from 15% to 25%, with a poverty rate of about 18%. A large percentage of the minority population live in neighborhoods surrounding vacant industrial sites. Trenton's Pilot Project focuses on 15 Brownfields sites, covering a total of 23 acres. It has also targeted potential sites over more than 600 acres within an urban enterprise zone. The Pilot is seeking to engage the entire community - especially affected neighborhoods - in identifying the problems, opportunities and resources associated with these sites. It is also important to identify financial resources in order to develop a comprehensive strategy for site assessment, cleanup, and reuse. The goal is to create a model for institutional change in the overall site remediation process and to serve as an example for small, former industrial cities. The city's Department of Housing and Development has the lead role with several primary groups as partners including an advisory council, a non-profit community development corporation, and a roundtable discussion group.

All 23 acres of Pilot Project properties have been assessed. Cleanup is underway at two sites. The emphasis is on two-way communication and citizen involvement through community advisory groups. To overcome developer fears of liability and to kick-start restoration efforts, the city is taking aggressive actions to acquire the Brownfields sites through tax foreclosures, sale of tax certificates, condemnation, or eminent domain if needed. The city is then able to leverage State/Federal funds for assessment, cleanup and reconstruction. It

can then enter into lease-purchase arrangements with private developers who establish businesses on site. The city is working closely with private developers and community development corporations to market the sites. Approaches are tailored to individual sites depending on acreage, existing building capacity, and location. The city emphasis is on Brownfields sites in low and moderate income, and minority neighborhoods. The project has held community meetings to engage residents in the process, seek their input, and educate them on the nature of hazards and their potential remedies.

3.2.4.15 WEST CENTRAL MUNICIPAL CONFERENCE (WCMC)

The West Central Municipal Conference (WCMC) is a regional council of governments comprised of 36 municipalities that cover a total area of 200 square miles in suburban Cook County Illinois, just west of Chicago. These are mature "inner ring" suburbs that have recently experienced a steady loss of jobs and population as businesses have relocated to "greenfields" in more rural areas, leaving behind an increasing number of abandoned industrial sites, many of which are contaminated. The WCMC is a regional organization that is comprised of representatives from the member municipalities. The goal of this Pilot is to select two publicly owned sites and two privately owned sites for redevelopment. The Pilot has created a Rapid Response Team to provide timely expertise and guidance to the major stakeholders and create a strategy for strengthening community-municipal-industry partnerships.

Before a site is selected for the project, it must have some inherent marketability. A total of four sites have been identified thus far, each of which has different contaminants, and poses different risks to public health and the environment. EPA Region V used a mobile laboratory to conduct limited surface soil analyses to assess possible environmental problems at selected locations within the target area. The Pilot is also actively investigating alternative

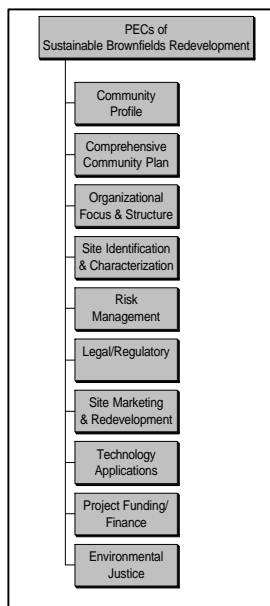
financing mechanisms, especially public sector sources to fund cleanup and redevelopment. The Pilot has developed an outreach program that targets municipalities, businesses, civic groups and community groups. The municipalities that comprise the WCMC represent ethnically and socioeconomically diverse populations. Community redevelopment activities are designed to improve the conditions in inner-city environments where minority and lower-income populations are more concentrated.

ANALYTICAL RESULTS	
➤	Parameters, Elements & Characteristics
➤	Verification of Identified PECs

4.0 Analytical Results

The development of model frameworks to depict how the processes of sustainability and Brownfields redevelopment relate at the project level is predicated upon the identification and correlation of the key parameters, elements and characteristics (PECs) associated with successful, sustainable Brownfields redevelopment.

4.1 Parameters, Elements, and Characteristics (PECs) of Sustainable Brownfields Redevelopment



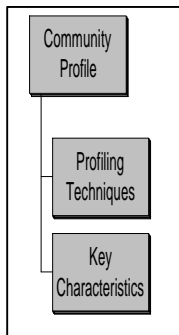
Through the review of the various data sources, a comprehensive list of major factors that contribute to sustainability and Brownfields redevelopment was created. This list was categorized on the basis of a systematic analysis of when, how, and the degree to which the factors are present and interact to influence the sustainable redevelopment of Brownfields. Through this procedure of identification, collection, categorization, and organization, each category was observed to be, in essence, a process unto itself. The result is the set of ten key elements defined in this section and presented as sub-processes of the overall sustainable Brownfields redevelopment process. In addition, the characteristics associated with each element are described as they relate to the three parameters of sustainability – ecological, economic, and social – described earlier in Section 3.1.2.

In certain cases, factors have been identified through our research that are just emerging as innovative and promising elements and characteristics of sustainable Brownfields redevelopment. Because these are relatively recent, little data was

available to properly analyze them. Therefore the analysis of these factors and the degree to which they occur within various processes need to be addressed in a future study when more data is available and their application can be evaluated.

Consequently, this compilation of key elements and characteristics should not be considered as all-inclusive or final. Rather, it is a dynamically evolving list that will change as more Brownfields projects mature and experience is gained over time with individual PECs.

4.1.1 *Community Profile*



Community profiling is the critical process through which a community develops self-knowledge of its social and economic history, its culture and collective character, its current composition, community assets, and the physical, biological and functional attributes of the natural ecosystem(s) with which its members interact. The profile sets the context in which the proposed redevelopment will take place. It becomes the benchmark or foundation from which all community decisions regarding Brownfields redevelopment and sustainable growth are derived. Hence, the profile serves as the starting point for assessing a community's direction and measuring its success in pursuing sustainable Brownfields redevelopment.

The profile is the basis for community members to learn and understand their common history, geography, and the natural cycles which affect their daily lives. This understanding enables members to feel rooted in the community and begins to "shape their sense of place". It enables the members to gain respect for all other parts of their community by understanding and appreciating the basic human and land ethic: "everything is related to everything else" (Bernard and Young, 1997). With these fundamental principles identified and ingrained throughout the community, the planning process, in which the community looks to the future and decides what it should be and how to achieve it, can proceed.

The community profile begins from the premise that the development of information about the community is fundamental to the understanding of the community's needs, problems, distressed populations, and how the proposed development will ultimately affect the community. In addition to providing critical decision support information to community leaders, planners, other public officials, and the community as a whole, the community profile also provides potential developers with a guide in the preparation of their proposals. It can also serve as a basis for interpreting and evaluating the effect of those proposals and establishing a degree of community control over the project outcome.

The sustainability of a proposed development depends heavily on the degree of "fit" between the intended future uses of the site and the community's understanding of itself, its quality of life standards and its projected goals for the future. By clearly understanding these aspects of itself, the community will have a basis from which to direct its energies to those projects that support its future. The identification of its unique assets and qualities also provides support to the efforts of the community to market itself to potential new residents, business entities and funding sources.

Profiling Techniques that have been Effectively used by Communities

- Statistical data collection and analysis
- Historical overviews, surveys and evaluations to comply with the National Historic Preservation Act (16 U.S.C. 470)
- Community surveys using standard questionnaires
- Interviews with community leaders and long-term residents
- Focus groups
- Design charrettes
- Public meetings

For example, by the early 1980's, Chattanooga, TN had lost most of its core industry, unemployment was high, air pollution was the most critical public health concern, and the community members had lost confidence in regaining the quality of life they once enjoyed. A community profiling process began as part of a comprehensive urban planning effort. This process enabled its citizen's to see how attractive their community was before the pollution problems, to see the role its industries had in shaping the landscape and the population demographics, and to realize the value of their two most distinct natural assets – the Tennessee River and Lookout Mountain. This knowledge and understanding enabled community residents to provide informed input as part of the community's "Futurescape" survey, essentially creating the community's vision for the future. With this planning underway, initial redevelopment and environmental cleanup began. Following the opening of a new Aquarium along the restored riverfront, community confidence bubbled and momentum was generated to sustain further redevelopment efforts (Chattanooga Site Summary Section 3.2.3.3).

Use of a community profile can also assist planners and the community in determining how the existing resources of a community can be used to further the economic sustainability. The conceptual basis of a community's economy can be categorized into the basic sector, or those goods and services produced for export outside the community, and the non-basic sector, or local trade and service activity. To the extent that income to the community from the basic sector is spent locally for goods and services and does not leak back out, the output of local businesses is increased and additional rounds of spending will occur (Leistritz, 1994). The more a community can maximize the use of its own resources to meet its collective needs, the more likely it will be able to minimize the flow of money away from the community and increase the sustainability of its economy.

In another example, the Cape Charles Community was able to define five existing industries with immediate and ongoing potential for development as part of its profiling process (Northampton, 1994). These industries were considered to be indefinitely sustainable if managed and developed wisely. By focusing on the existing strengths of the community, developed through the community profile, the town of Cape Charles and Northampton County were able to focus attention on fully developing the sustainable potential of existing resources.

Key Characteristics of Community Profiling

- ✓ Developing an Environmental Inventory
- ✓ Estimating Natural Resource Consumption Limits
- ✓ Identifying Landscape Features
- ✓ Associating Ecological Assets with Community Values
- ✓ Defining the Community
- ✓ Developing a Sociocultural Understanding
- ✓ Recognizing Attractive Community Features
- ✓ Preserving Historic Resources
- ✓ Developing a Sense of Community Self-reliance
- ✓ Characterizing the Community Economic Basis
- ✓ Assessing Social Capital
- ✓ Assessing the Investment Climate

Key characteristics of the community profiling process include:

- Developing of a comprehensive environmental baseline inventory that includes natural and biological resources, pollution sources, and potential areas of contamination. The geographic scales should range from the surrounding region down to individual neighborhoods and open or greenspaces within the community, to individual parcels.

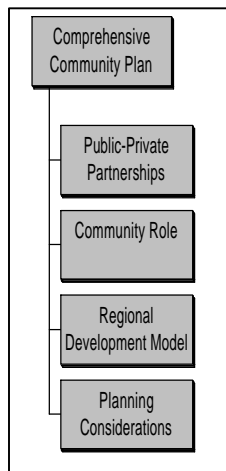
- Estimating limits of natural resource consumption use and loss based on historical patterns.
- Identifying significant landscape features, physical assets, sensitive habitats, endangered and keystone species, and unique areas to be protected.
- Associating ecological assets with community values. As communities develop their baseline inventories, and identify what features they consider significant and to what degree natural resources should be protected, they will also be clarifying the value these assets have to the collective community. Knowledge of how the community values its natural resources becomes critical in the planning process for determining priorities, especially in rural communities.
- Defining the demographic composition and general character of a community, including the number and mix of residents, residence patterns, important institutional and community arrangements, significant community groups, sources of internal conflict, and anticipated population trends.
- Developing a general understanding of sociocultural conditions that contribute to community stability or instability, family cohesion, crime, and social institutions. Stability and, therefore, future sustainability results from a combination of stable employment in jobs that pay a living (or family) wage and long-term residential patterns that create connections to the community and between residents.
- Recognizing and understanding what features make the community attractive; the unique features of social life in the community, lifestyle patterns, sources of community pride, historical or cultural identity, special capabilities or contributions of the community to the society at large , etc.

- Describing and preserving significant archeological and historical resources. Existing historic districts, buildings, places, and objects serve as anchor assets within communities. These assets represent historic themes or architectural designs that foster a sense of permanence within the community, and provide continuity from one generation to the next. An example is found in the manner in which the town of Cape Charles, VA has designated its core area as a historic district to preserve the early American, maritime character of the community.
- Identifying the degree to which the community has established a sense of self-reliance and developed external linkages to social, business and ecological entities that contribute to the maintenance and success of the community context and strengthen its ties to the outside world.
- Characterizing of the economic basis of the community including the mix of business and commercial activity, level of business activity, State and local tax structures, the capacity of existing service delivery systems (infrastructure), the levels of employment, income and poverty.
- Assessing the formation of social capital in the form of the existing make-up of the labor force, its skill and education level, and its availability to participate in and support any new development that may be proposed.
- Assessing the existing and potential future climate for investment both within the community and in the larger society is important to the long term funding capability for any proposed project. The capability of local governments to borrow funds to offset any short-term cash flow problems or meet any uncertainties associated with a proposed project is also important. These are important components in determining the capacity of the community to address the fiscal burdens that may be associated with any new development.

Income levels also play a part in any prospects for the success and long-term sustainability of proposed redevelopment of a Brownfields site. Especially in smaller communities and particularly in rural communities, the level of income and, specifically, the level of disposable income available in that community may have a decisive influence on the community's decisions with respect to future reuse of a site.

With respect to decisions related to any proposed Brownfields redevelopment project, the community profile provides a static picture of the local community to serve as a basis to evaluate the overall effect of the action to be taken.

4.1.2 Comprehensive Community Plan



The primary goal of a comprehensive approach to community planning is to integrate the Brownfields redevelopment process into a larger community development plan. The process of development is a public process and correspondingly, the planning of that process must include not only narrow sections of the public interest, but must also be responsive to the community's larger needs. Thus neighborhood improvement plans are linked to community development master plans that are in turn linked to county, regional or statewide economic development plans. This enables the community's understanding of its future goals and the requirements necessary to meet those goals to become integrated into all geographic and political scales and thereby helps sustain the community over the long term.

The focus of community planning is placed on the planning process itself, rather than on a single, specific outcome. It is in the planning process that community participants, including individual stakeholders, become involved and committed. The plan itself evolves as the community's needs change, thus enhancing the

potential sustainability of the plan by maintaining a predictive balance between needs and services – both in the near-term and long-term future.

The more directly the community is involved with the planning, the more likely the plan will reflect the community's needs, requirements, goals, and vision of its future. Correspondingly, the more the planning provides for the common good of all its members, the more support from the community will be forthcoming. The ultimate sustainability of any planning process rests with the long-term support of the community.

The requirements, needs and goals incorporated into the planning process will be unique and specific to each community. Brownfields program or project based planning is more likely to make a sustainable contribution to the community if it takes these specific needs into consideration early in the process and maintains a community based planning focus throughout the life of the project.

A community based plan is also focused on defining who the development is directed to assist, where they are located and what assets and liabilities of the community are involved. Because of the number of individual entities, agencies, organizations and areas of professional expertise involved in a Brownfields redevelopment process, the comprehensive planning process requires the forging and nurturing of relationships across several different institutions and agencies. The planning process therefore becomes a conscious, intended collaboration between private sector organizations, public agencies and the community as a whole.

4.1.2.1 A NEW UNDERSTANDING OF THE PUBLIC – PRIVATE PARTNERSHIP

One of the more productive strategies incorporated into the planning process is a revised conception of the role of public agencies in facilitating and supporting

the development process, including the redevelopment of private properties. “The public sector can do things the private sector cannot do. They can run interference and set things up so that the private sector can move in and make investments.” (AAF, 1996) In other words, the public sector can serve as the stimulus, or catalyst to causing change in those situations where private companies would be precluded due to risks, costs, or market conditions.

The role of public-private partnerships in the planning and development process (or private-public partnerships as one site respondent emphasized) was evident in a number of the Pilot Project efforts studied. Where such partnerships have been created, the results have been reported as successful. In a number of instances, the distinction between public and private is somewhat blurred as the resulting entity has strong elements of both sectors. Chattanooga is one example where these types of partnerships have been quite successful.

In other cases non-profit development corporations offer an increased capability to address problems that may not be amenable to treatment by for-profit developers. Because non-profit organizations are not limited to making only those investments with a known rate of return, they are able to address redevelopment projects that present a higher level of risk than is acceptable to a private developer. By addressing these properties, non-profit developers can add value to a property by decreasing the level of uncertainty that may be associated with its cleanup and redevelopment. They also have access to sources of money for planning and assessment that for-profit developers may not have.

The nature of the Brownfields process also requires a strong cooperation between public entities and private developers both in the planning and implementation stages. For several of the projects examined, the importance of bringing public officials into the planning process early and keeping them informed throughout the course of the Brownfields process was important to

the continuing support and cooperation of the municipal government during the implementation phase. Conversely, the absence of this kind of cooperation is also cited as a major impediment in projects that have experienced disappointments.

4.1.2.2 THE ROLE OF THE COMMUNITY IN THE DEVELOPMENT PROCESS

The community can have a number of influences on the Brownfields development process. Some examples include the community's master plan and zoning decisions that dictate outcomes. The community can also create stipulations with respect to the requirements or outcomes of the planning process that include design, function and acceptable levels of cleanup and risk.

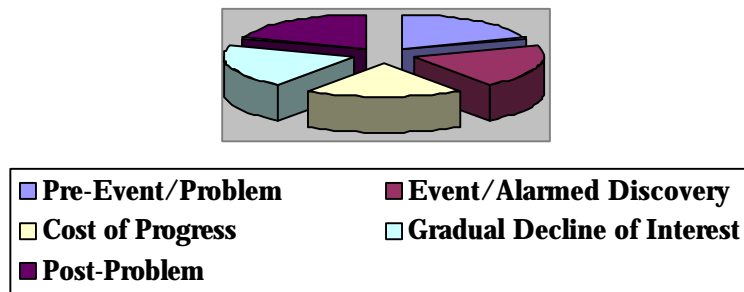
Almost all Pilot Projects investigated as a part of this study incorporated some form of community involvement in their planning process. This range of activity includes the formation of community advisory boards to assist in the development of selection criteria and the site screening process, as well as the participation of community representatives in design charrettes to formulate and review the design plans for proposed facilities, or site uses. Several communities have also relied on the past knowledge of neighborhood residents to develop site histories and potential contamination scenarios. This technique was important to the New Orleans project, which was able to take advantage of the personal memories of long-term neighborhood residents. In almost all cases, community residents were given the opportunity to review and comment on proposed development plans prior to final implementation.

The challenge for sustainability, as noted in several interviews with project participants is to get the community to take responsibility for the appearance, vitality and marketability of the community as a whole, not just the specific site or project in question. It is important to overcome the "not in my backyard (NIMBY)" and "let someone else do it" mentality so that changes can be made

locally. This reduces the dependency of the community and at the same time promotes the self-sufficiency of the residents. It also serves to increase the public's involvement and awareness of the problems and the solutions being implemented, making them active participants rather than simply passive beneficiaries, or victims.

The establishment of the project vision cannot be accomplished without community outreach and the subsequent involvement of the largest sector of the affected resident population. This involvement helps to define the standards to be applied to any subsequent development, and facilitates public acceptance of the effort. A key issue for the sustainability of the planning process is the tendency for the attention and energy levels of the community to diminish over time. (The Pilot Project will be a long process from the first recognition of a problem through the initial organization and planning stage, to the final implementation of new development.) This tendency to lose focus has been described as a cyclical process, "the issue attention cycle" (Downs, 1972). The cycle has five stages:

The Five Stages of the "Issue Attention Cycle"



- The pre-event or problem stage during which there is some recognition of an undesirable social condition by a select few individuals but the problem has not come to the full attention of the public as yet.

- The event or alarmed discovery stage at which point, there is a sudden and general realization of the problem and its implications. This usually follows some defining event or action that brings the problem to the forefront of attention.
- The recognition of the cost of significant progress stage usually following a call for action and general mobilization. At this stage, there is recognition that the costs associated with resolving the problem are high and that really addressing the problem may require major commitments of time and effort. Attention is gradually lost.
- The gradual decline of intense interest stage follows the third stage closely and results in a sense of discouragement or boredom with the issue as other issues emerge to attract attention.
- The final stage in the process is the post-problem stage in which the issue has been fully replaced by some other concern and fades from public attention and action.

One of the more frequently cited strategies for overcoming this cyclical process is to assure that the public is educated and knowledgeable of the requirements of the process. This can be achieved by fostering a culture for learning among the community participants. Learning attracts genius and knowledge. Since the knowledge needed to make good decisions on behalf of the community and its future is always changing, the community's commitment to always remain open to new ideas and information is required. New ideas, dreams and creativity should be rewarded and nurtured throughout the community (beginning at the school age level) and continued throughout the planning and development processes (Bernard and Young, 1997). Sustainable communities have developed

processes to learn, to retain, and to share knowledge, and thereby stimulate greater momentum.

Another strategy is the incorporation of a catalytic event that energizes the community and keeps the momentum of the process going while retaining a high level of public support for the process. This occurred in Chattanooga when the city was unable to attain its clean air goals and was viewed as an unhealthy place to live and work. Outside recognition of the project, in the form of grant awards or national attention, also serves to maintain a high level of public attention to the project. The EPA Brownfields Pilot Project grant and the President's Council on Sustainable Development's Demonstration Project Award to the Town of Cape Charles/Northampton County, VA have had such an affect.

However, it is not always certain that community involvement in the program is essentially beneficial. The underlying problem with community involvement shows itself when only those segments of the community that are the most vocal, or have the time and energy to attend meetings come forward. This type of involvement does not always provide a true picture of the community's wishes. The important concern for the planning process is how to get out into the community and begin teambuilding efforts that include the broadest possible range of population segments in order to get everyone on the same path.

4.1.2.3 INTEGRATION OF THE BROWNFIELDS PROCESS INTO A REGIONAL DEVELOPMENT MODEL

In addition to locating the overall project in the context of the surrounding neighborhood and the host community, the inclusion of a regional and/or ecosystem perspective in the planning process affords the benefit of linking the project to a wider base of resources, natural functions and personnel expertise. This

is especially important for rural projects that have limited organizational resources in the immediate community, but are rich in natural resources (The Rhode Island model is a good example). A regional model also contributes to the overall marketability of the area and increases the potential to generate new investment and business expansion.

One of the more significant challenges to the redevelopment process is to address the spatial mismatch between the location of new job growth and the location of the people who will take those jobs. A mixed use, regional approach improves the potential for co-location of workers and their employment.

A regional approach also eliminates the possibility of regional entities competing for new industry, sources of funding, or in developing conflicting plans for the same areas. Several projects, including Cape Charles and Chattanooga, found that minimizing the potential for this type of conflict was a significantly positive step.

The potential for attracting new development in the form of relocating businesses from existing facilities in other communities to newly redeveloped Brownfields projects raises a question of regional equity. As opposed to creating opportunities for development from within the indigenous community, such relocation has the potential to impact the sustainability of other communities or development efforts affected. The Brownfields are simply moved from one community to another – not eliminated. This can affect existing economic bases, both within the region and in other regions removed from the development site.

Development planning must consider that any new business or employment be genuinely new and not simply a relocation from one community to another. Otherwise, no real development has occurred and nothing prevents the dislocation of employment again, affecting the potential future sustainability of the new development. The Economic Redevelopment Administration's regulations prohibit the use of Public Works and Development Facilities program grants to relocate jobs

from one area to another as does the Job Training Partnership Act (GAO, 1997). In order to create new businesses, several communities have incorporated business incubators into their economic development plans.

Similarly, a regional approach increases awareness of a possible oversupply of certain types of land uses or activities in a given area; essentially the result of over-replicating the same development model. Regional planning decreases the possibility that a development will have too much local competition (for example, an oversupply of the same recreational resource – like multiple historic old-town districts in nearby communities) resulting in a repeat of the under-utilization cycle. A regional approach allows for the needs of a larger community to be met successfully and increases the long-term attractiveness of new development thereby avoiding new Brownfields sites.

4.1.2.4 IMPORTANT PLANNING CONSIDERATIONS

Planning Considerations
✓ Comprehensive “Holistic” Approach
✓ Carrying Capacity
✓ Urban Growth Boundaries
✓ Surrounding Land Uses
✓ Mixed Use Environment with Pedestrian Orientation
✓ Economic Self-sufficiency
✓ Community-Stakeholder Consensus
✓ Uncertainty and Planning Options
✓ Equal Benefits and Burdens of Brownsfield Redevelopment

Several important socioeconomic and ecological considerations of the planning process were identified and related to sustainability. Many of these characteristics

represent “best practices” of sustainable redevelopment, which are growing in community favor and implementation worldwide (EPA Interviews).

Comprehensive or “Holistic” Approach - Brownfields sites are usually not created in isolation. They become underutilized or abandoned sites as the result of an interplay of multiple and complex forces. These include both external factors such as changes in the national economy, in residential preferences for one region over another, or local conditions such as the decay of a particular neighborhood or region of a city. In order to ensure the sustainability of the planning effort, it must include a comprehensive approach to all of the concerns related to the Brownfields site and the surrounding region. The focus cannot be on just one problem in an area, but needs to address the area as an integrated whole and over both the near and long-term future. A focus only on attracting new business to provide immediate employment, for example, may ignore some of the fundamental causes of unemployment (poor skills, depressed economy, etc.) and therefore fail. In the planning process, it is important to capture additional layers of the problem and add new participants to assure that all issues are identified and all potential stakeholders’ expectations are included.

Carrying Capacity - A major concern for the planning process is that the proposed development consider not only the carrying capacity of the affected ecological area, but also, the ability of the community to support the proposed activity. In short, is there a market for the proposed activity in the community, and can the ecosystem support it? The most frequently cited urban example is proposing to build luxury condominiums in a predominately low-income, working class community. Here, the levels of income among the local residents required to sustain the condominiums are not balanced with the income base and lifestyle components of the community. The socioeconomic requirements of the development therefore exceed the carrying capacity of the community, affecting the success of the project. In rural areas, ecological carrying capacity must be

considered in the planning process. An example is proposing to build a residential development of single family homes in an arid location with a small, shallow aquifer and predominantly clay or rock substrates. The ecosystem's clean water and soil filtration capacities cannot meet the water use demands and septic discharge requirements of a large number of homeowners. This imbalance could adversely affect the success of the development as well as the health or quality of the ecosystem within a short period of time.

Urban Growth Boundaries - One goal of Brownfields redevelopment is the adaptive reuse of existing structures, features and available land in the urban center to avoid the continuing loss of greenfield lands on the urban fringe. This goal recognizes that, regardless of the rural or urban location, ecosystems, economic systems and social systems each have varying tolerances and limits that cannot be exceeded. For example, parents place limits on what and where their children can play; businesses set limits on certain types of costs or market conditions they can accept, and forests have limits to how much acid rain and harvesting they can tolerate before their sustainable limit is permanently exceeded. The community needs to identify and establish limits to what it can reasonably support. Without established limits institutionalized through the planning process, the community has no basis for saying "no" to unacceptable, unbalanced, or senseless redevelopment. A community's maturity in setting and maintaining limits is ultimately the true measure of progress toward sustainability (Bernard and Young, 1997). Urban growth boundaries represent one strategy that is being successfully implemented to increase the density of development in the inner city, making use of existing infill possibilities, and increasing the efficiency of urban public transportation (Burlington, VT Pilot Project).

Surrounding Land Uses - A key component of the future sustainability of a planned project is the consideration of surrounding land uses, not only at present, but also in the foreseeable future. This is another example of the value of linking the

Brownfields redevelopment effort to the overall community plan. A plan to redevelop an industrial site into a residential community will be problematic if the surrounding land uses will continue to be used for heavy industry.

Mixed Use Environment with Pedestrian Orientation - Another recent characteristic of the community planning process that furthers the sustainability of a redevelopment is the emphasis on mixed-use development with a pedestrian orientation. This idea is especially appropriate for development in inner city and suburban neighborhoods. The proximity of jobs and services to residential areas will decrease the reliance on one business or employment source and help minimize the reliance on automobile transportation. This should increase economic flexibility and conserve energy demands on the environment. This concept is the focal point of several European projects examined such as the Westergasfabriek in Amsterdam, Holland, and the IBA Emscher Park Redevelopment in Germany, as well as the Chattanooga downtown redevelopment project in the United States.

Economic Self-sufficiency - Development must be undertaken with a good understanding of the structure and dynamics of both the local and national economies. One of the key factors contributing to the long-term sustainability of a region is the efficient use of local resources. Planning that emphasizes the importance of reducing leakage, due to reliance on external resources or imports, increases the potential flow of money into the area resulting in increased employment and business opportunities. Promoting local ownership increases accountability and commitment to the overall success of the community effort (Burlington, 1997).

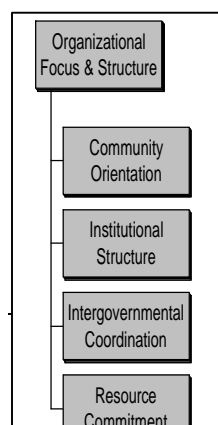
Community-Stakeholder Consensus - The ultimate success of the planning effort depends heavily on the development of a consensus, or "buy-in", on the part of the community and all relevant stakeholders. This implies that although the planning process must reflect the goals and vision of the community, and especially of those

residents and businesses in the immediate local areas, some measure of compromise will be required in order to satisfy all participants. As noted by one respondent, once there is more than one stakeholder, Brownfields redevelopment becomes an iterative process.

Uncertainty and Planning Options – A fundamental concept of the planning process is that the primary parameters of sustainable development - the social, ecological, and economic systems of a community - are complex and only partially understood. (Rapport, 1997) (SCGPN, 1994). As a result, the total impact of a redevelopment project and its final outcome, both sociologically and ecologically are difficult to predict. Change is an inevitable and an unpredictable fact of life. Thus any planning process must account for variables and maintain sufficient flexibility to allow for the maximum possible freedom in terms of ranges of acceptable options at every stage of the planning and development process. This allows the community to remain open and consistent with the natural direction and tendencies of the ecological, economic and social systems.

Equal Benefits and Burdens of Brownfields Redevelopment - Sustainability depends on the support of the local community. A planning process that does not account for the potential impacts of redevelopment across all segments of society at all socioeconomic levels loses important segments of the affected community. Planning that only benefits developers and a small segment of the community by focusing on real estate with a high market value diminishes the potential stability and continuity of the community.

4.1.3 *Organizational Focus and Structure of the Brownfields Program*



The sustainability of a Brownfields redevelopment project incorporates two separate and distinct components. One is outcome oriented and relates to the sustainability of a specific Brownfields project or cluster of projects, and the

degree to which these projects make some contribution to the overall sustainability of the community. The other is process oriented and considers the sustainability of the Brownfields program itself and the extent to which the program contributes to a process of sustainable redevelopment in the community.

Process orientation relates to how a community's Brownfields program is integrated into the political and administrative structure of the metropolitan government. The ability of the program to maintain itself and function over time and the role the program plays in the redevelopment and revitalization process of the community are important concerns. Therefore organizational focus and structure of the Brownfields program directly affects the sustainability of the Brownfields program itself.

Because the Brownfields initiative is relatively new, the optimal program model has not yet been completely determined. The successful organizational structure of a Brownfields redevelopment project is still being defined in a pattern that is different for each community. The Brownfields process has been described as an iterative one in that a number of parallel sub-processes, all of which are operating simultaneously during the life of the project, must be successfully integrated. The resulting set of conditions and circumstances are sufficiently unique, and the available resources are so multiple and diverse, that each project and each community has to develop its own distinct approach to the successful effort.

Although each Brownfields redevelopment project is in many ways distinct, there are several characteristics of project organization and function that can be commonly associated with sustainability. These characteristics include a community orientated approach, control of the program by local jurisdictions, a

conducive institutional structure, the need for extensive intergovernmental coordination, and resource commitment.

4.1.3.1 COMMUNITY ORIENTATION

The Brownfields program is very much a grass-roots effort in that it depends heavily on the initiative and participation of the local community. A number of projects have been, at least in part, successful because of the leadership skills, vision, and concern of a number of key individuals in both official capacities with local and metropolitan governments, and in non-official roles as community participants.

Conversely, where project outcomes have been disappointing, some question of the effectiveness of individual project or community leadership is evident. Although this component of project organization is not easily categorized or necessarily quantifiable in terms of its contribution to sustainability, the qualities of project leadership (e.g., strength, dynamism, vision, persistence, and dedication) are important and frequently associated with the long-term success or sustainability of the program effort.

The program also requires the successful involvement of a number of people in the community (stakeholders and other participants) to make the program work. Brownfields Pilot Projects depend heavily on the presence of a strong Working Group, Advisory Group, or Steering Committee. This allows for a greater diversity of participants and stakeholders to be represented and sitting together under one structure. A generic identification of these key participants and stakeholders is presented in Figure 4.1.

It is important to note that stakeholder identification and association with a particular group or issue is not fixed and may cross over into other groups or issues as the Brownfields process moves forward. The identification of an

individual with a particular stakeholder or community group (or social category) does not mean that the individual is also not simultaneously a member of any other stakeholder group. Individual stakeholders may be part of one or more interest groups or categories simultaneously, and therefore will address an issue differentially, at different times, and in differing contexts. An individual may be a resident at the neighborhood group meeting, a consumer at the community association meeting, and an environmental activist at the town council meeting. Multiple roles and multiple agendas on the part of individual stakeholders add a potential for internal instability to the Brownfields organization.

Table 4.1: Typical Stakeholder Configuration for a Brownfields Redevelopment Program

<u>Stakeholder</u>	<u>Interest</u>
Current Owner	<ul style="list-style-type: none"> ❖ release from current liability ❖ income from sale or redevelopment
Prospective Owner/ Developer	<ul style="list-style-type: none"> ❖ identify marketable property ❖ reduce uncertainty/quantify risk ❖ balance liability against return on investment ❖ minimize development cost
Investors (Banking Organizations)	<ul style="list-style-type: none"> ❖ maximize return on investment ❖ avoid liability on potential foreclosure
Neighborhood Groups	<ul style="list-style-type: none"> ❖ provide needed facilities or services ❖ remove hazardous, dangerous or undesirable conditions ❖ increase employment ❖ improve quality of life
Municipal /State Agencies	<ul style="list-style-type: none"> ❖ carry out regulatory, funding, or redevelopment mandate
The Local Business Lobby (Chambers of Commerce)	<ul style="list-style-type: none"> ❖ improve community image ❖ increase level and diversity of business activity
Community or Citizens Groups	<ul style="list-style-type: none"> ❖ improve general condition or specific segment of community ❖ eliminate contamination / hazardous conditions
Grassroots Groups	<ul style="list-style-type: none"> ❖ advance single issue agenda
Legal, Scientific and Technical Personnel	<ul style="list-style-type: none"> ❖ clarify statutory/regulatory requirements ❖ improve ecological quality ❖ increase technical knowledge ❖ improve or innovate new techniques

National Public Interest Lobbies	❖ support agendas to be incorporated as a part of proposed development.
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The sustainability of the Brownfields process depends on the development of a working consensus among stakeholders with respect to the understanding and vision of the community, the articulation of the overall goals or plan, and the mechanisms by which to achieve them. In order to be sustainable, the structure of the Brownfields program needs to facilitate the inclusion of all relevant perspectives presented in the community. A structural mechanism for sharing information about the program with participants and for exchanging information among various component groups is a major component of this process.

One such mechanism was incorporated into the structure of the Chattanooga project. A common conference room is maintained in the offices of the program's non-profit developer to serve as a central meeting room and conference facility for the downtown district. Walls are filled with plan drawings, pictures and artists renderings of proposed and completed projects. Although the room serves as conference space for the firm, its primary purpose is to be a central place for any and all issues, meetings, and matters related to downtown and the downtown redevelopment. This includes public meetings and issue groups not directly related to the design process.

4.1.3.2 INSTITUTIONAL STRUCTURE

A key organizational factor for the long-term success of the Brownfields project is the structural relationship of the project to the host governmental entity (metropolitan or state) and the level of responsibility and authority assigned to the project. The sources for public authority for the Brownfields program are normally derived from the municipal government or a state chartered agency.

Although a Brownfields project is normally associated with its ecological and human health components, the salient characteristics of the Brownfields process lie in its relationship to the overall economic development of the area, neighborhood or community.

Several Pilot Projects noted that it was the economic development staff of the respective host governments that were best equipped to be of assistance to the Brownfields effort or to act as the parent agency for the program. This recommendation was especially applicable in communities that relied on a large number and variety of grants to fund project activity. Other agencies, such as city planning departments and environmental agencies, although important and responsive in many respects, were considered to be less prepared to deal with the economic requirements. The most likely pattern for success and the long-term sustainability of the project was to assign the Brownfields effort to the community's economic development staff as the lead or coordinating agency.

The level of administrative authority assigned to the Brownfields organizational structure varies from project to project. In some instances, an independent authority composed of both public and private interests was created to manage the process. In others, the role was assigned directly to a specific agency. In either case, the presence of strong project leadership defined in terms of the level of authority and hierarchical position of the municipal coordinator was considered critical to the overall success of the project. There are two specific aspects important to this role. It should be assigned to a position high enough in the municipal structure to be able to exercise power and prestige within the government. It should carry sufficient authority to represent to the general public an image of political importance for the project and the capacity to compel decisive action to secure necessary approvals and initiate government action.

The strong support of the municipal government is considered essential to the long-term survival and success of the Brownfields process. It is also important for local political leaders and government bureaucrats to define their roles with respect to the project and their constituents early in the process. Several project participants reported seeing a demonstrable advantage to having the city involved in the Brownfields process. Much of the land use work in which the city is engaged is also Brownfields type development. Municipally owned Brownfields are often the most attractive for redevelopment. The city is also able to pass bonds to finance the assessment and cleanup process.

4.1.3.3 INTERGOVERNMENTAL COORDINATION

A central, coordinating authority and a single administrative entity are strongly associated with the success and ultimate sustainability of the process. This is because of the number of individual and potentially overlapping or conflicting government authorities (e.g. State and Federal agencies, regional structures, municipal departments, etc.) that may play a role in the Brownfields process. Without a centrally located mechanism at City Hall to act as a coordinator, projects appear to falter. There is a definite need to have a point person who is connected to the city administration and who can act as a conduit to other key players within the municipal structure to broker requirements and deals.

Another important factor identified in several Pilot Projects is the reliance on advisory committees, or task forces, to support local project coordinators. These groups are typically comprised of private sector and multiple level government individuals with expertise directly associated with Brownfields redevelopment processes. One example is the Rapid Response Team (RRT) concept used by the West Central Municipal Conference in Illinois. The RRT membership includes the Regional EPA, as well as the state environmental agency, the financial industry, and legal representatives, in addition to the regional planner, and others who are available to address whatever types of issues arise at the project level.

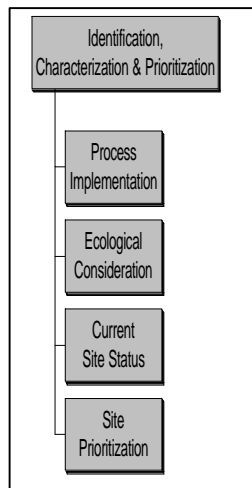
Similarly, the presence of multiple organizations charged with formulating and implementing the development process may result in confusion and duplicated effort. The Brownfields process requires the coordination of civic groups and other private organizations related to project planning, goal setting, design development and decision making. Centralizing all Brownfields operations under a single structure increases the level of responsibility and accountability associated with project operations. Along with better communications, this structure facilitates monitoring and coordinating project activity.

4.1.3.4 LEVEL OF INVESTMENT/RESOURCE COMMITMENT

Important to the long-term sustainability of the Brownfields program of any community is the level or magnitude of the investment that it can make. Such investment is represented by a combination of public funds (i.e. allocated by budget); Federal and State grant funds, private foundation or other private donation, and private investment capital. The available social capital of the community (or volunteer participation) represents another component.

The Brownfields program goals must be considered in the context of the community's ability to provide support to the process, and the level or magnitude of the investment (in all forms) that the program can expect. The proposed program must be within the fiscal and social capacity of the community. Miscalculation of the community's ability to provide for the requirements of this process, as well as to support the end product or use the outcome of the process, is a serious consideration for the long-term success of the community's redevelopment process. A program that is too ambitious presents a challenge for sustainability. Similarly, the under commitment of resources to a program is also frequently noted as a threat to its long-term success.

4.1.4 *Brownfields Site Identification, Characterization and Prioritization*



The single most fundamental characteristic that distinguishes Brownfields from other types of real estate properties, to be developed or redeveloped, is the presence or perception of contamination by hazardous substances. Just as the presence of a historic property or wetland generates additional concerns and processes in overall real estate development, so does the existence and perception of chemical contamination.

The degree of knowledge regarding the presence, type, source, extent, and severity of the contamination directly influences project success. This degree of knowledge must then be applied to the project in terms of marketing, redevelopment, financing, and legal or regulatory strategies and options. Therefore, the early identification, accurate and effective characterization, and prioritization of a site(s), are all critical steps to the process of achieving sustainable Brownfields redevelopment. The goal is to obtain as much information through an integrated, streamlined approach as project funding permits. The more information obtained in this phase, the greater the potential for success becomes.

4.1.4.1 PROCESS IMPLEMENTATION

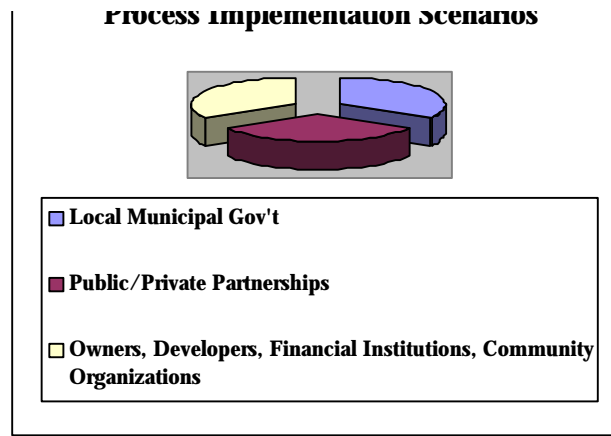
The approach and strategy required to implement this element will vary on a site-by-site and project-by-project basis. The first determination to be made is who performs this element and under what authority. There are several possible mechanisms to initiate the process, such as:

- current property owner operating responsibility or under consent agreements;

- prospective property owner/user operating under related state laws;
- private developer and non-profit development organization also operating responsibility or under state laws; and
- Federal, state, or municipal government agency operating under applicable statutory or delegated authority (e.g. CERCLA, RCRA, TSCA, State “Superfund”, etc.).

The determination of which party initiates and performs this element is critical and must be made in conjunction with other Brownfields redevelopment elements or processes because of its resultant bearing on property value, marketability, site cleanup, reuse, liability, and financing. In certain cases, it is advantageous for different parties to perform different components of the process, or to perform them together in a partnership. Generally, it is best for the property owner, or prospective property owner, to perform the site identification and assessment of individual sites or properties. However, many private owners and developers fear this process, believing they may only be opening a Pandora’s box. In reality, the more that is known about the property, the better able the owner is to develop strategies to successfully maximize its potential use and value.

Our research has identified three scenarios occurring most frequently depending on who takes the lead in performing this element. These scenarios form a range in regard to their potential to promote sustainability of the redevelopment effort.



- One typically

scenario is most
y found with

the EPA Pilot Projects. This scenario involves the local municipal government taking the lead role in site investigations. Following its assumption of title to the Brownfields parcel, a municipality, acting through its environmental or economic development department or designated task force, can proceed with the investigation. Ownership by the municipality is established through tax foreclosure, condemnation, public taking, purchase, or other instrument. This scenario has been very effective in getting abandoned Brownfields characterized and prioritized, and is a viable option in initiating the overall Brownfields redevelopment process. However, municipalities usually do not have the financial or technical resources, especially in rural areas, to move the site beyond characterization. Because of limitations on the use of public grant funds for site cleanup, they are faced with the difficult problem of how to achieve cleanup or restoration, after the site is characterized.

For example, in New Orleans, the Consortium has been very successful in characterizing its top ten sites, which resulted in some positive attention for the community. But the effort has stalled, temporarily, until the city can market the sites and move them into the cleanup and redevelopment processes. This approach can be effective where there are multiple abandoned or foreclosed properties that the municipality can address as a bundle or cluster. Aggregate properties are often more marketable to the private sector because their combined size offers the developer more flexibility in the type of reuses possible.

- Another scenario involves public/private partnerships, usually in the form of non-profit corporations, taking the lead and performing the site assessment and prioritization. Non-profit corporations have certain advantages over municipalities in terms of applying innovative approaches, the allocation of liability, and the level of uncertainty or risk that can be assumed from the outset. Although this approach still faces barriers in how various sources of public funding can be used, it offers more flexibility overall. Also, a partnership is more likely to obtain or incorporate the specific types of information needed by private developers to evaluate and design subsequent site redevelopment or restoration. An example is the Foundry Site in Chattanooga where the local economic development corporation, a non-profit partnership, has taken the lead in leveraging various sources of financing, both public and private, to characterize parcels and market them as part of an overall urban redevelopment project.
- The third scenario involves property owners, developers, and financing institutions that take the lead with support from community organizations and municipalities. This includes private interest groups, non-profit foundations or developers, and local community groups although their actions are somewhat more limited by the group's economic or technical resources. The following three variations on this scenario were identified among the various interviews.
 - Owner/developer/lender identifies a Brownfields property and initiates the site characterization process then coordinates with the community on plans for the site.
 - Owner/developer/lender work in conjunction with a community organization to identify and characterize a site that the firm is interested in redeveloping.

- Owner/developer/lender come into the process after the community has identified a number of sites, and select a site(s) from the community's list for further characterization.

This approach, regardless of variation, offers several advantages. For instance, it enables the owner to select the site and customize the information collection and site characterization process. This allows the owner to obtain the type and extent of information needed, in the most cost-effective manner. Specific risks, site cleanup and design requirements related to the type of redevelopment being considered are also addressed. The financing of this process can also be integrated into the overall site analysis and master plan for the site. This eliminates the need for separate financing to perform the cleanup, which is much more difficult to obtain from a lender because it has high risk and little likelihood of immediate payback.

The geographic scale and number of properties can also determine the initiating organization. Here, the scope of targeted sites can range from a relatively straightforward site to regional, citywide, neighborhood, defined cluster, and complex single site. For instance, in the case of the three rural and two urban towns in Rhode Island, the State RIDEM took the lead because they were able to address multiple properties of the same type (former mill sites). A similar approach was successfully employed in Oregon where a private/public non-profit partnership, serving under the overall direction of the State's Economic Development Department, conducted the identification and assessment of mill sites scattered throughout nine rural communities. On a smaller scale, the City of New Orleans, using a variety of techniques, was able to identify 167 sites throughout its downtown neighborhoods and screen down to the top ten highest priorities for further assessment. At the other end of the range, in Chattanooga, an urban redevelopment partnership is conducting Phase I surveys

on every parcel located in the Southside Project site, and a private developer is conducting the assessment of the Cavalier Development site.

4.1.4.2 ECOLOGICAL CONSIDERATIONS

Ecological Considerations

- ✓ Delineation of Site Characteristics
- ✓ Representation of Nature of Contamination
- ✓ Streamlined Site Assessments
- ✓ Integration of Assessments, Audits, Inspections
- ✓ Identification of Groundwater Contamination
- ✓ Continuous Updating Procedure
- ✓ Site Prioritization Schemes
- ✓ Multi-level Screening Process/Prioritization Model
- ✓ Utilization of Available Technical Resources

Regardless of who initiates and performs the site identification, characterization and prioritization process, a number of important ecological considerations contribute to the overall success and sustainability of the redevelopment effort. These include:

- An accurate delineation of site location, boundaries, historical use/ownership, and physical characteristics with regards to the local landscape, ecosystem, and municipal plat. This information can often be obtained through the community profile, Phase I “Due Diligence” surveys, “windshield reconnaissance,” and previous surveys. The Phase I survey should also indicate whether or not the site is on EPA’s CERCLIS list, making it a potential candidate for state or Federal enforcement action.
- An accurate representation of the nature of the contamination including type of contaminants, source(s), concentrations, location on site, extent and potential for migration, pathways of exposure to the public health and local biota, and relative toxicology or health threat. This information is developed

through Phase II site investigations. It must be accurate, verified through proven quality assurance methodologies, and complete enough to develop reliable remediation/restoration strategies and cost estimates.

- Streamlined or “targeted” site assessments using field screening technologies and mobile analytical laboratories. These have proven effective and cost efficient in Rhode Island’s and in New Orleans’ site assessments. The EPA’s Road Map to Understanding Innovative Technology Options for Brownfields Investigation and Cleanup is a good initial source of ideas and requirements to help implement these assessments (USEPA, 1996(a)).
- Integrating Phase I studies and Phase II investigations with other environmental audits, including wetlands determinations/delineations, stormwater runoff management assessments, and multi-media facility compliance inspections, all of which are needed to obtain the necessary site development permits.
- Identification and characterization of groundwater contamination is especially critical due to the complexity of evaluating its extent and remediation options.
- Integrating site characterization information into the community profile to create a continuous updating procedure. Computerized information management technologies such as Geographic Information Systems (GIS) are very effective and efficient methods for recording, managing and evaluating these multiple levels of site data.
- Developing site prioritization schemes that include ecosystem management criteria that reflect community goals and values, natural resource assets, and the benefits/impacts of redevelopment.

- Utilizing a process such as EPA Region I's prioritization model which classifies sites according to two criteria – nature and extent of site contamination, and inherent redevelopment potential or site marketability. New Orleans has developed a multi-level screening process based on a series of criteria determined by community members through the Consortium.
- Utilization of technical resources available to small communities and private owners/developers through Federal agencies, academic institutions, and private consultants, if necessary, because characterization of contaminated sites can be complex.

4.1.4.3 CURRENT SITE STATUS

Although the characterization of a number of factors is important to the potential sustainability of site redevelopment, two are of primary importance. They are the level of site contamination and the inherent redevelopment potential of the site. Several project participants have suggested that a gross, preliminary conceptualization of potential Brownfields sites can be based on these two factors. Essentially a matrix, this characterization establishes two polar extremes with high contamination in a bad market at one end and low contamination and a good market at the other. EPA Region I has employed this model to characterize and screen the range and variability of potential redevelopment projects.

Figure 4.2: Matrix Characterization of Brownfields Sites

	Low Contamination	High Contamination
High Redevelopment Potential	Existing High Potential for Private Development	Potential Brownfields Candidate Site

**Low Redevelopment
Potential**

**Potential Brownfields Site
Candidate**

**Cleanup and Closure – No
Potential**

In the first instance, the combination of high potential and low contamination usually means that a site will be very attractive to outside, private developers and will not be a high priority concern for a Brownfields program, since it will most likely be redeveloped by other mechanisms. At the other extreme are sites that, even if cleaned up, would still not be suitable for redevelopment usually because of a poor market or an undesirable location. These are not the most promising in terms of the success and sustainability of a Brownfields project. The remaining sites represent varying levels of contamination combined with different degrees of marketability. These sites represent the largest portion of sites, and therefore the major focus for a sustainable Brownfields redevelopment program.

Long-term Success Factors in Brownfields Sites

- | | |
|-------------------------------------|-----------------------------------|
| ✓ Land Uses & Adjacent Landowners | ✓ Transportation & Infrastructure |
| ✓ Current Ownership | ✓ Significant Features |
| ✓ Remediation Cost | ✓ Current Economic Conditions |
| ✓ Community's Socioeconomic Context | |

Other factors that may be important to establishing the current status of the site and therefore its potential long-term success as a Brownfields redevelopment project are:

- The site's relationship with surrounding land uses and adjacent landowners. The context of the site is important to the final determination of future reuse and is probably the most important consideration in terms of the site's marketability. Failure to address this characteristic can delay or inhibit the overall redevelopment process.

- The current ownership is important to determining the time and level of effort involved in acquiring the site and implementing any final plans for its redevelopment. Absentee owners, resistance on the part of current owners based on fear of contingent liability, problems identifying site ownership - in the case of abandoned sites - and delays in public taking for tax or other reasons can all present lengthy delays in the process. This results in a corresponding loss of momentum and increased potential for failure of the project. In general, municipally-owned and Federally-owned properties present the least resistance in terms of current site ownership.
- The potential cost of remediation is a major factor that has the potential to impact both the final decision on future site uses and their potential sustainability. Use of a risk-based remediation strategy and the potential for use of institutional controls may result in a decreased cost. This improves the potential for redevelopment of some sites that are close to the extreme in terms of contamination or current marketability. Also important is the potential for the adaptive reuse of existing structures on the site. This is especially important for sites in historic districts, and also has a significant cost reduction as well.
- The socioeconomic context presented by the surrounding community is a critical factor in determining existing site conditions and how they will later be related to any proposed new development. The local community profile, and especially the future development goals of current residents, become important components of the current site status. Also important are the potential local users, or customers, for any proposed new facility and the availability of a potential labor force in the nearby community - especially where a service or retail facility is considered.
- Transportation and infrastructure considerations also represent important factors in determining current site status. Obviously, the more prevalent and

adaptive the infrastructure the greater the site's potential for both short-term action and long-term success.

- Significant features associated with a site are an important characteristic for its potential sustainable redevelopment. A large portion of the existing Brownfields Pilot Projects, for example, are located near some type of waterfront or shoreline (e.g. harbor, lake, riverfront). Other features of importance may include historic districts, entertainment or recreational areas, greenways, significant architectural features, traditional ethnic neighborhoods, or any of a number of other characteristics that may be defined by the members of a community as important or critical to the maintenance of community character or lifestyle.
- Current economic conditions, although often considered remote from any one particular site, can have a significant defining role in the current status and ultimate desirability of a site. The economies of the immediate neighborhood, local community, or nation as a whole heavily impact the site and its potential for future reuse. Of critical importance to residential, commercial or retail sites are the levels of employment and poverty in the immediately adjacent areas. But no less important are the levels of income, and particularly the disposable income, of residents of the community in general. For industrial areas, the national economy often becomes the defining feature. In all cases, the local investment climate and the attractiveness of the community as a place for investment are critically important.

4.1.4.4 SITE PRIORITIZATION

Of equal importance to the Brownfields process is the question of selecting which of the inventory of potential sites will be redeveloped and which will be given priority in the redevelopment process. Community stakeholders should be involved in, or at least well informed of, these efforts so that the results are mutually understood and

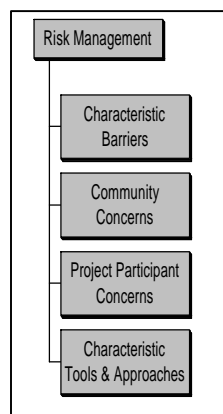
the potential for unrealistic cleanup expectations is minimized. This enhances the lead organization's credibility and public trust.

A number of Pilot Projects have developed site ranking criteria for the purpose of prioritizing and selecting those sites that will become the subject of the Pilot effort. Site ranking criteria are usually developed through some combination of information modeling, public input, and other trial or intuitive factors. Examples of factors that have been included in the ranking criteria include:

- ownership status;
- tax status;
- land area and the history of land uses;
- the degree of reclamation work required – including any demolition requirements;
- the type and extent to which contamination is an impediment to development;
- the availability or eligibility of the site for grant or program funds;
- a determination of the probability of project success if the contamination is removed; and
- the early identification of end users of the property.

Strong community participation and inclusion in all phases of the identification and evaluation process is cited as the most successful approach in establishing site ranking criteria and subsequent prioritization. In addition to assuring that local community and neighborhood values and goals will be included as a part of the site prioritization process, public involvement at this stage also contributes to an increase in the public's support and enthusiasm for the project as the project proceeds through its later stages.

4.1.5 *Risk Management and Site Restoration*



Brownfields site restoration and reuse is one component of a broader economic development process that must deal not only with the traditional risks involved with real estate transaction and development, but also with the concern for protecting the public health and environment from exposure to oil and hazardous chemical contaminants. The site cleanup and redevelopment process adds an unfamiliar range of risks to the current property owner, prospective buyer, potential developer, investor, and the community at large. These risks include, among others:

- environmental liability;
- time and cost overruns caused by project delays;
- technology faults and obsolescence;
- personal and third party liability for accidents;
- diminished property value;
- loss of investment;
- changes in market conditions;
- community fears regarding public health; and
- the need for community support.

Because these risks are always present, they cannot be ignored. The management alternatives are to accept, reduce, avoid, spread, or transfer these risks (Grose, 1987). Where the emphasis is placed and how the various risks are balanced with their benefits and costs will vary by project and by the parties involved. Regardless of the manner in which they are approached, the immediate goal is to provide maximum flexibility and balance between facilitating the project and protecting the public health, the environment, and personal or corporate liability

(EPA Interviews). Risk management is the process of identifying, clarifying, and dealing with this range of uncertainties in order to achieve the project goal.

Risk management and site remediation processes can promote sustainable Brownfields redevelopment by addressing a number of key project requirements that relate to the immediate and long-term interests of different stakeholder groups. Some examples of these concerns, identified through the structured interview process, include the need for:

- greater accuracy and reliability in site characterization data, cleanup techniques, and cleanup cost estimates;
- remediation approaches based on relative risk and land reuse that are equally protective of public health for future generations;
- overcoming public fears and misconceptions about the extent and nature of the pollution that may linger from one generation to the next;
- reducing liability and financial uncertainty for developers, owners, and lenders;
- restoring ecological integrity or preventing further damage to the ecosystem's physical, biological and functional components; and,
- permanent disclosure of site conditions and contaminants to protect prospective owners, lenders, and developers of the property in the future.

4.1.5.1 CHARACTERISTIC BARRIERS TO EFFECTIVE RISK MANAGEMENT AND SITE REMEDIATION

Risk Management & Site Remediation Obstacles

- ✓ Stakeholder Communication & Coordination
- ✓ Reluctant or Hesitant Stakeholders
- ✓ Community Priorities & Objectives

✓ Incomplete or Inaccurate Site Characterizations
✓ Threat of Contamination Spread
✓ Long-term Remedial Approaches
✓ Government Policy & Requirement Changes
✓ Loss of Market Opportunity Window
✓ Contingent Risks of Owners/Developers

In order to address the specific requirements of a Brownfields redevelopment project and assure its future sustainability, a number of risk management and site remediation obstacles must be overcome. These include:

- a greater potential for communication and coordination problems than is normally evident in a redevelopment project due to the increased number of stakeholders involved;
- delays caused by those stakeholders who are not familiar with the risks involved and are therefore reluctant or hesitant to provide the support activities needed to accomplish the effort;
- extraordinary pressures placed on owners and developers by communities with differing land use priorities and objectives;
- limitations to existing pollution detection, measurement, and cleanup technologies and methods that result in incomplete or inaccurate site characterizations (especially in situations where pressures exist to accelerate cleanup and minimize costs), increased potential for future discovery of additional contamination problems, failure to achieve the cleanup levels required, and an inability to allay the concerns of the public and regulatory agencies;
- the potential threat of spreading contamination, either due to the lack of source controls, accidents during remediation, or complications in mitigating

pollutant migration, that can affect and involve adjacent landowners and neighborhood residents;

- long-term, complicated, and very costly remedial approaches that impair project financing and private developer incentives, such as groundwater contamination which is viewed by a number of developers and Federal officials interviewed as a “real show stopper” (Federal Officials and Boston stakeholder interviews);
- changes in government policies and requirements, or variations across multiple agencies and levels of government, that create confusion in delineating liability and result in unexpected project costs;
- additional time needed for owners/developers to reconcile risks and liability with the community and regulatory stakeholders that can cause the project to lose its window of market opportunity; and,
- difficulty in providing liability reassurances, insurance, or indemnification to those owners/developers who might otherwise be willing to incur the costs for cleanup as part of their overall cost, but who are unwilling or unable to incorporate the contingent risk of additional contamination and its subsequent cost to cleanup.

Overall, the risk associated with a Brownfields redevelopment process has essentially two components. The first is the potential risk of chemical exposure to the community surrounding the site. The second is the level of uncertain liability that the potential project participants (e.g., owner, developer, lender) face in the management of the project. The community as a whole is concerned with the benefits associated with the reduction of risk to public health posed by a contaminated property and the potential adverse effect of any increased exposure encountered during the restoration process. This can include the residual contamination remaining after the redevelopment process is completed. The direct project participants (e.g. owner, developer, lender) are confronted by the potential risk associated with a continuing responsibility for any previously

undetected contamination of the property. This essentially translates to a permanent liability.

Although the interests of these two groups often diverge, and are sometimes in opposition, both groups share a common interest in developing a mechanism by which risk related liabilities can be effectively managed and controlled. This process depends on obtaining the most accurate and reliable information available and on developing a sense of trust in the agencies that are responsible for regulatory control and long-term risk management.

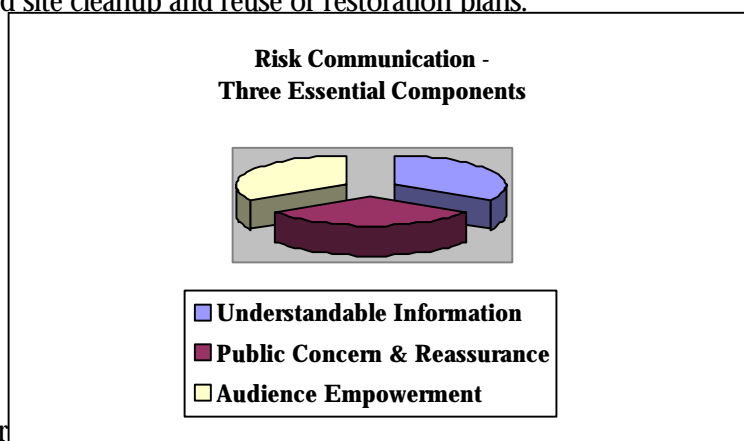
4.1.5.2 COMMUNITY CONCERNS

The key factors influencing community response to risk relate to the manner in which the potential risk is presented and interpreted, and the level of trust or confidence the public places in the defining institution or agency. Although the types of risk inherent in a Brownfields redevelopment are not new, they are unfamiliar to, and not fully understood by the broader range of stakeholders and the community at large. Especially questionable are risks associated with environmental contamination, cleanup, and liability. Failure to adequately inform and involve the public can cause significant delays as a result of public reluctance or outright opposition to the project.

As Freudenburg (1994) notes, there is no such thing as a self-interpreting fact. In order for the public to effectively compare and evaluate the risks and benefits associated with all possible redevelopment alternatives, they must reach a certain level of understanding. They must understand not only the factual basis of the actual risk, but also the meaning of the risk in relation to such questions as, 'Is it safe?' or 'Just how safe does it have to be?' This understanding is not easily attainable in the absence of any prior experience with, or information about, the risk. In any event, quantitative estimates of actual risks do not necessarily relieve

the public's concern. (Sinden, 1992). The key to the sustainability of a Brownfields project is to ensure there will be someone to translate the scientific and technical results to community groups.

The important connection of risk communication to the sustainability of a Brownfields project, rests with this need to provide not only for the transmission of information, but also to develop shared meanings among individual stakeholders, institutions, and communities, and to establish relationships of trust. This is a specialized effort undertaken to reach-out to those stakeholders and public citizens who are interested in the project, to educate them, and to involve them. The objective is to achieve community and stakeholder acceptance and support for the proposed site cleanup and reuse or restoration plans.



In order to include three essential components. It should inform by translating the information and knowledge produced by the scientific and technical community into a context that makes it both accessible and readily understandable to the general public. It should alert the public to be concerned for those issues that are critical to both their interests and the process itself, and also reassure them with respect to the positive and desirable aspects of the project. Risk communication should also empower its audience to act with respect to the health related and environmental risks that are being communicated. (Sinden, 1992)

Outreach efforts should channel through existing community groups that have established credibility within the community (New Orleans, LA and Providence, Rhode Island Site Interviews). Complex technical jargon should be effectively translated to enable the general public to understand the common phases and mechanics of the site assessment and remediation process (Boston Interviews). These efforts should also address the risks posed by the nature of the contamination relative to common risks incurred everyday by community citizens. In conducting risk communication activities, it's important not to create false hopes, unwarranted fears, and unrealistic expectations among the public/stakeholders. This is accomplished by framing the information within, or keeping the focus on, the desired outcome, (e.g. new business opportunity, jobs, housing, services, and tax revenues) rather than parts-per-million problems.

The importance of informing and involving the community as early as possible in the process is reflected both in the effectiveness of the outcome and in the degree of confidence that stakeholders have in the process and the managing organizations. Experience increasingly shows that when stakeholders are not included early in the decision-making process, they are more likely to resist the decision, oppose its implementation, and distrust the organizations that are charged with implementation. (Jenkins-Smith, 1992). Conversely, decisions in which stakeholders are involved early in the process are usually more effective and more durable. Engaging stakeholders ensures that public values are considered, improves the knowledge base for decision-making, and may improve the credibility of agencies responsible for managing risks. (CRARM, 1997)

4.1.5.3 PROJECT PARTICIPANT CONCERNS

Project Participant Concerns

✓ Current Owner -

✓ Reluctance of Participation

✓ Liability Indemnification
✓ Developer -
✓ Return on Investment
✓ Risk Factors/Perception of Risk
✓ Lender -
✓ Borrower Circumstances
✓ Maintain Property Value

In many ways, the most serious obstacle to the potential redevelopment of a Brownfields property is not the presence of contamination, but the perception of contamination. The owner, developer and potential investor associate economic concerns with the uncertainty of future liability. These project participants are interested in the potential benefit that may be derived from development of the property in question. However, they are significantly impeded by the adverse impact that may result from an incomplete characterization of existing site contamination. Also, the potential for discovery of new contamination at some future time, the failure of institutional controls related to a limited reuse development, or changes to government policies that threaten the basis for earlier negotiations or agreements play a role.

Current Owner - One of the more frequently cited obstacles to the progress of a Brownfields project is the reluctance of some current owners of idle properties to become involved in either Phase I or Phase II site investigations or to release their property for sale. Even where efforts have been made to encourage participation through new liability provisions or legislation, some owners still resist the opportunity to assess, remediate, or dispose of their contaminated property.

Although a number of reasons were given for this reluctance, (e.g. investment, waiting for the property value to appreciate, confusion over ownership, etc.) the

apprehension over liability for site contamination and the fear of discovery factored heavily in the owners decision to avoid sale or site investigation. As noted by one interview respondent, owners are aware that this liability exists in perpetuity. This fact makes them reluctant, either to investigate or disclose what may represent a severe financial cost, especially when these costs may be incurred years after disposition or sale of the property.

The potential environmental liability associated with the risk of site contamination for the current property owner, then becomes a major impediment to the sustainability of the Brownfields process. In one extreme example, when a tenant using a portion of a defunct facility discovered underground storage tanks, the owner took steps to have the tenant removed, not the tanks.

In addition to a number of legislative initiatives at the state and Federal level, a number of projects have developed special arrangements with local municipal governments to take ownership of sites as one means of mitigating this liability. Although the current owner cannot be permanently indemnified, these arrangements allow the municipality to relieve the current owner from responsibility by assuming ownership and agreeing not to pursue the current owner in the future. However, current landowners are aware that this is not an absolute guarantee and are concerned that laws, regulation, or practice may change in the future, making them again responsible for the liability.

Developer (or equity investor) - The key issue for the developer of a Brownfields site is the level of certainty or predictability that can be established with respect to the known contamination of a property. Correspondingly, the degree of uncertainty associated with the risk of liability for future problems discovered at the site weighs significantly. Central to this issue is the effect on the current value of the property, and the potential of the property for

successful redevelopment. The developer's primary concern is for the potential return on investment, and the relationship of that return to the potential risks associated with the property.

There are specific risk factors affecting any developer. These include:

- the nature and extent of the existing contamination;
- the existence of a proposed remediation plan with appropriate regulatory approvals;
- the potential for indemnification;
- the likelihood of third party actions arising from adjacent property owners, employees or tenants;
- the cost and timing of the remediation effort;
- any remaining land use restrictions on the property; and
- any other variable that might affect cash flow or the potential liability of the owner. (Jackson, 1998)

The perception of risk on the part of the developer or equity investor is also a function of the potential value of the property as a clean property and depends on the context of the property itself. Factors such as demand for and marketability of the site, the value of surrounding land uses, the general level of economic activity in the area and other qualities of the site and its surroundings will influence the level of risk that a developer will be willing to accept or undertake.

Certain society-wide conditions, such as the increasing pressures resulting from a shortage of developable land (both in terms of acreage and cost) and the currently favorable investment climate may serve to make developers more risk tolerant. Other intangible qualities may also come into consideration such as the potential prestige of participating in the project, any altruistic interests on the

part of the developer, or the desire of the potential developer to acquire a basis of experience in Brownfields redevelopment.

Lenders - Similar to developers, the primary concern for the lender is the effective management of site related risks. From the lender's standpoint, this concern is based on the possibility of ultimately becoming the owner of the property in question through foreclosure. A second consideration is that lenders may incur liability for contamination prior to actually taking possession of the property if the lender is perceived as participating in its management.

In addition to concerns for the level of risk associated with potential site contamination, the lender will also be concerned with risks directly related to the borrower. Central to this consideration is the borrower's ability to pay back the loan. In addition, the lender is also concerned with the circumstances under which the borrower owns or operates the facility and the risks that cleanup costs will exceed the available budget. The risk of any re-openers at the site, and the responsibility for addressing any unexpected situations once the project has begun, are also lender concerns. (Armstrong, 1998)

The orientation of the lender is to quantify to the greatest extent possible, the risks inherent in the site development. The lender will be interested in achieving the highest clean up standards possible so that the collateral value of the property is maintained throughout the course of the lender's involvement with the property. As noted during one of the site interviews, repayment of the loan is the primary concern of the lending institution. The last thing a bank or lending institution wants is to become the owner of a contaminated property.

4.1.5.4 CHARACTERISTIC TOOLS AND APPROACHES FOR RISK MANAGEMENT AND SITE REMEDIATION

Characteristic Tools & Approaches

- ✓ Project Organizing
- ✓ Federal & State Agency Roles
- ✓ Risk-Based Corrective Action (RBCA)
- ✓ Property Ownership Alternatives
- ✓ Institutional Controls & Insurance

A number of characteristic tools and approaches were identified that respond to the barriers and needs of the risk management and site remediation processes. The objective is to reduce the chance of incurring unknown or unanticipated project delays, costs, and liabilities by identifying and quantifying them as early in the process as possible. The underlying principle is that predicting risk going forward is easier than attempting to reconstruct and quantify risks from past practices (Chattanooga Interviews).

Project Organizing - The potential risks associated with a project can be significantly reduced, and readily resolved, by including within the project organization experienced stakeholders or consultants who are already familiar with identifying, quantifying and resolving those Brownfield project factors that contribute to risk. This would include attorneys successful in real estate transaction and environmental liability risk, consultants and site contractors successful in characterizing and remediating the type of site and contamination problems expected, and investment organizations already accustomed to and familiar with creative financing options. The West Central Municipal Conference, a non-profit organization supporting local governments around Chicago, IL, has created a Rapid Response Team incorporating such expertise that can quickly respond to the risk issues raised by municipalities, owners, and others.

Federal and State Agency Roles - The role of these government organizations is crucial to the timeliness and effectiveness of risk management and remediation processes. Increasingly, the traditional roles these agencies serve in Brownfields redevelopment is changing from after-the-fact regulatory enforcement to up-front collaborative relations. These agencies become stakeholders in the processes, sharing technical resources and information, clarifying liability alternatives early on, and generating mutually agreeable strategies and plans for site restoration. Hence, they share in some degree of the project risks. Examples of collaborative tools are State Voluntary Cleanup Programs (VCP), Rhode Island's Remedial Evaluation Reports (Rhode Island interview), EPA Comfort Letters and Prospective Purchaser Agreements, and EPA/DOJ Supplemental Enforcement Projects (EPA Interviews).

Risk-Based Decision-Making Approach - EPA's guidance on risk base decision-making for corrective actions at underground storage tank sites where petroleum releases have occurred represents a promising new approach that specifically addresses human and ecological risks (USEPA, 1996(b)). Basically, it is a process that employs risk and exposure methodology to help agency officials determine the extent and urgency of corrective actions, and the scope and degree of regulatory oversight needed. It provides consistent site assessment or investigation requirements; flexibility in developing cleanup levels or goals appropriate for the proposed or future use of the site; a basic approach for evaluating remedial options; and a sound scientific basis for regulatory and community acceptance of cleanup decisions. This aids in developing reliable project schedules and cost estimates. The importance of EPA's guidance to the management of risks associated with a Brownfields project is that, by working through the process, specific target levels are identified. This reduces project uncertainties and enables the risks to be resolved and/or cost quantified. Where risk-based decision-making is incorporated into the corrective action process for underground storage tanks through formal standards developed by the

American Society for Testing and Materials (ASTM), it is known as “risk-based corrective action” or by the acronym RBCA. Hence, the ASTM’s RBCA standard may be a good framework for approaching site restoration and redevelopment.

Property Ownership Alternatives - Risks from certain environmental liabilities can be reduced or transferred depending on property ownership. Federal agencies and local municipalities are assuming ownership of many abandoned sites. They are implementing the site characterization and remediation processes, then transferring or selling the site to other public or private parties. Under recent state legislation, a state agency or municipality can provide degrees of indemnification to the new owners for risks posed by previous contamination problems (EPA and Federal Agency interviews). Leasing of Brownfields sites reserves the environmental liability for the owner while enabling the site to be cleaned up or restored to safe use (Chattanooga interviews). Multiple contaminated parcels can be clustered and addressed collectively, enabling multiple owners to share the environmental liability and costs of remediation or insurance. This allows the site to progress toward redevelopment and reduces the respective risks and costs incurred by individual owners (Cape Charles and Chattanooga interviews). Because public/private partnerships and non-profit development groups do not need to obtain the same rate-of-return from developing a site as private owners and developers, they can temporarily assume ownership while restoring the site or alleviating the causes of environmental liability. They can then sell the parcel at its new market value to private developers for subsequent redevelopment.

Another alternative is structured “3-way simultaneous transactions”, where the middle owner assumes regulatory responsibility as temporary owner. This owner funds and remediates the contaminated property, obtains agency

approvals needed to restore the property to the market, and sells the property to the perspective buyer (Hollingshead, 1998).

Institutional Controls and Insurance - Institutional controls by state and local governments, such as special zoning codes, ordinances, and covenants provide instruments that enable the property to be used within prescribed limits. It also ensures permanent disclosure and a long-term record of liability associated with Brownfields. For example, Northampton County, VA has developed a comprehensive set of covenants and restrictions intended to manage current risks and to minimize future risks for the industrial park in Cape Charles.

A growing variety of self-insurance programs and private insurance policies are viable options for addressing potential costs associated with environmental and other liabilities over long time periods and among other parties. The insurance industry is providing greater flexibility in the types, terms and costs of policies, which can limit or completely eliminate some of the risks involved in site assessment and remediation. The three common types of environmental insurance include: property transfer insurance, cleanup cost cap/loss insurance, and owner-controlled insurance (USEPA, 1997(a)). In addition, Contractor's Pollution Liability and Consultant's Environmental Impairment Liability insurance policies are available.

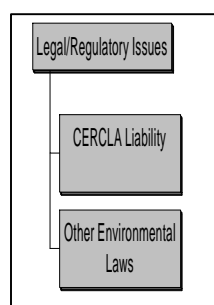
Characteristics of new environmental liability insurance include:

- long-term periods of coverage, often more than 20 years;
- policy limits tailored to the predictive cost of remediation;
- options for reinsurance;
- affordable premiums; and
- policies adaptable to sellers, buyers, and lenders.

Use of insurance as a risk management tool can reduce the fears or reluctance of buyers and allow them to allocate risks among the seller and other involved parties (Taylor, 1998). Thereby reducing the risk of absorbing one-time, major costs, or to cover contingency costs.

Due to the complexity and pivotal role that legal/regulatory processes play in risk management, a separate element has been identified to discuss them in further detail.

4.1.6 Legal/Regulatory Issues



The effects of legal/regulatory issues are woven throughout the fabric of Brownfields projects. They may take such forms as barriers to property transfer (e.g. investigation and commitment to cleanup triggered at time of change in ownership) and utilization (e.g. zoning, wetlands) or limitations on owner (e.g. restrictive covenants) or governmental authority (e.g. municipality's inability to spend its money on privately owned sites). Most of these impacts, however, are known and their associated cost or risk can be defined and quantified.

Economic viability is a key factor in sustainability and for investors and developers in deciding whether or not to engage in a Brownfields project. This factor is usually defined by a balancing of economic benefit and cost. Quantification of cost typically addresses the value of money and risk. The legal/regulatory issues of most concern to the Brownfields' investor are not the ones that impact cost directly or indirectly, but those that introduce risk, particularly undefined or ill-defined risks.

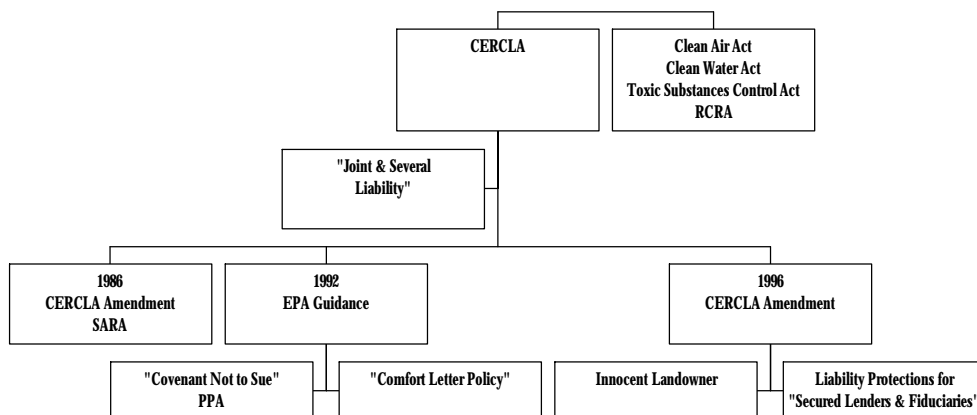
The investor is comfortable with legal/regulatory obstacles when the cost to overcome these obstacles can be factored into the economic viability equation.

These costs may be excessive but that is an alert that the economic benefit or return must be greater. However, the greatest disincentive to the investor is excessive or unknown risk. For this reason, it is those legal/regulatory issues that better define or even reduce risk that can have the most impact on the success or failure of a Brownfields project, and will be addressed here.

4.1.6.1 CERCLA LIABILITY

The legal/regulatory issue most associated with a Brownfields Project is primarily one of environmental liability and its concomitant costs and delays.

Figure 4.3: Evolution of Brownfields Environmental Liability



The principal source of Brownfields environmental liability is the liability for cleanup under the Federal Superfund Statute – the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The intent of CERCLA is to impose strict, joint and several liability for the cost of cleanup of a contaminated site on the parties responsible for the contamination. These parties are the current and former owners or operators of contaminated properties and those that arranged for the disposal of wastes at the site. However, parties that have not necessarily caused or contributed to the

contamination have been interpreted to be “owners or operators” or “arrangers”.

Under the strict, joint and several liability scheme, a single responsible party at a site can be held liable for all of the costs of cleanup, even if that party only contributed a small portion of the waste. The party bringing suit does not need to prove intent or negligence. Therefore, a present owner who only recently purchased the property could be held liable for all of the costs of cleaning up the site. Further, if that party sells the property to a new owner, the previous owner can still be held liable for all of the cleanup costs. As a result of this potential legal liability, and the lack of control over future activities at the site, prudence may impede the decision to transfer contaminated properties even when they have outlived their usefulness.

Buyers, including local governments, can be held liable for cleanup costs at a contaminated property, even if they did not know the land was contaminated at the time of purchase. Sellers can be held liable for cleanup costs, even if they sell their property to a purchaser who agrees to assume all of the risks associated with the property. A party can be held liable if that person generated or transported materials to the property, even if that person acted properly. Additionally, owners or operators of the property can be held liable for cleanup costs even if the person disposed of waste many years earlier and acted properly under then existing laws.

As a result, concerns for environmental liability can act as a disincentive for the following parties associated with a Brownfields project:

- potential purchasers, developers, and occupants of such properties;
- current owners that wish to avoid investigation of or loss of control over such properties in connection with redevelopment;
- lenders for Brownfields projects; and

- corporate entities and individuals associated with such parties whose activities or responsibilities might cause them to be considered to fall within the “owner or operator” or “arranger” category.

To address these concerns regarding environmental liability, certain amendments to CERCLA, State and EPA regulatory policy changes, and legal decisions have been issued to better define the responsibilities of the various parties. For instance, the 1986 CERCLA amendments, the Superfund Amendments and Reauthorization Act of 1986 (SARA), provide a defense for “innocent landowners”, who unknowingly acquire contaminated property as long as they undertake the requisite inquiry (CERCLA Sections 107(b) and 101(35)).

Earlier court decisions and an EPA rule were superseded by a 1996 CERCLA amendment that added new protections from liability for “secured lenders and fiduciaries.” These provisions modify the security interest exemption to lenders, to establish a liability exemption for fiduciaries. It also specifies actions that can be taken by lenders and fiduciaries without incurring liability. This protection essentially provides that an owner of a facility who holds ownership primarily to protect its security interest, but does not manage the facility, is exempt from liability (CERCLA Sections 101(20)(E)(G) and 107(n)).

In addition, EPA, in its attempt to further clarify or reduce risk regarding owner/operator/arranger liability and thus encourage Brownfields development projects, has adopted enforcement policies toward that end. For instance, under the “Comfort Letter” policy, EPA will provide letters to assist parties who seek to purchase, develop, or operate a Brownfield. Typically, this letter clarifies common misunderstandings about NPL listing and CERCLA liability and includes provisions indicating EPA will not pursue those parties for the cleanup costs of past contamination (USEPA, 1996(c)).

Furthermore, 1992 EPA guidance revised earlier 1989 guidance expanding liability protection for small volume waste contributors under the “de minimus” settlement provisions of CERCLA. These provisions allow settlement with a party whose responsibility for hazardous substances at a site are minimal in both amount and effects.

EPA guidance has also expanded the criteria it uses to decide whether or not to enter into “covenant not to sue” or “Prospective Purchase Agreements” (PPA). EPA can now consider benefits to the community in the form of jobs, productivity and revitalization as well as direct benefit to EPA in the form of a voluntary cleanup or reimbursement. Also, PPAs can now protect the parties from potential contribution lawsuits by third parties, as well as from Federal enforcement actions (USEPA, 1995 (b)).

The risk related to environmental liability not only stems from the broad range of potentially affected parties, but also from the uncertainties associated with the adequacy and finality of the cleanup remedy, and the possibility of regulatory delay. EPA addresses these issues in the abovementioned policies and guidance, but additionally has been ready to help the parties in a Brownfields project to better clarify or define risk through its interpretation of the CERCLA definitions. An example of this is EPA’s current approach to interpret the definition of “facility” as not necessarily including an entire functional site (e.g. factory or plant), but to focus on those places where the hazardous substances are located (EPA Interviews).

States such as Massachusetts, Michigan, and Pennsylvania, and municipalities such as Chattanooga, have added a step to environmental liability risk reduction. Through various means they have not only created “covenants not to sue” but have also put in place “agreements to indemnify” (Northeast/Midwest Institute, 1998). This may seem to be an extreme form of encouragement, but some type

of indemnification commitment appears to be the wave of the future to get Brownfields development off the ground.

4.1.6.2 OTHER ENVIRONMENTAL LAWS

Other environmental laws may also impact the environmental liabilities of the parties involved in a Brownfields project during the cleanup and redevelopment phases. Air emissions during this stage may be regulated by the Clean Air Act. Process stormwater discharges may be regulated by the Clean Water Act. Even PCBs or other substances subject to the Toxic Substances Control Act may be involved. However, the law most likely to impact a Brownfields site is the Resource Conservation and Recovery Act (RCRA). It was enacted to regulate hazardous waste treatment, storage, and disposal (TSD) facilities and underground storage tanks (UST). Most Brownfields sites, if not classified as hazardous waste TSD facilities, will have a UST somewhere on the site. Fortunately, RCRA's UST provisions, like CERCLA, specifically exempt persons holding a security interest in a site from cleanup requirements.

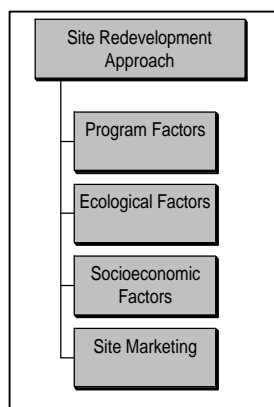
However, even if a Brownfields site is not regulated because of USTs, or because it was a former hazardous waste TSD facility, the developer may become a "generator" under RCRA simply by excavating any substances on the site which come within the definition of a "hazardous waste" (RCRA Section 3002). Either way, the RCRA "corrective action", "manifesting", "permitting", and "land-ban" restrictions may come into play and have a severe impact on the environmental liabilities and costs associated with development of the site.

Corrective action, for example, may direct cleanup of an entire "facility" before development may proceed on the part targeted for Brownfields development. The definition of "facility" under RCRA (RCRA Section 1004(29)) is more specific and rigid than under CERCLA. Where feasible, EPA is considering

amending the RCRA regulations to eliminate obstacles to Brownfields redevelopment. However, for provisions such as the facility definition, as with a number of others included within RCRA, relief cannot come from the USEPA or the courts. It must come from a congressional amendment of the law itself.

In summary, the cost associated with the risk due to environmental liability, which is either unknown or ill defined, may be the measure of difference between a successful and unsuccessful Brownfields project. To the extent that this risk is defined, investors and other parties can build in contingencies and make decisions to improve the probabilities of the success of the venture. EPA, state and municipal regulators and other interested persons have established policies, agreements, decisions, and guidance in a continuing effort to clarify, define and even reduce risk in the circumstances outlined above. Therefore, a significant indication of the probability of success of a Brownfields project is the extent to which the project decision-makers have availed themselves of this knowledge and introduced it into their decision making. Financially interested parties who have not calculated the risk from or, at worst, are not aware of the environmental costs and liabilities listed above are indicative of a Brownfields project with a dubious chance for success.

4.1.7 Site Marketing and Redevelopment Approach



A Brownfields site becomes abandoned or is underutilized for a number of reasons. Often the reasons have little or nothing to do with the perceived or actual threat of contamination at the site. The old base of large industrial institutions that was primarily responsible for the urbanization of America from the late nineteenth century to the present, has slowly eroded over the past twenty years. These industries provided economic support in the form of jobs, tax revenues, material goods and services, but also in many cases, served as a singular defining element for

the character of the city itself. Such associations as the automobile industry with Detroit or steel with Pittsburgh are just two examples. However, smaller communities such as Gary, IN or Chattanooga, TN have also been defined by their industrial past.

The decline of the industrial base has left a large inventory of economically unproductive Brownfields sites, not only in the industrial sectors but also in allied commercial, retail, and housing areas. Correspondingly, the economic base of employment and tax revenue for the urban community has been diminished. The new imperative for communities at the end of the twentieth century is to redevelop the Brownfields legacy of the American industrial boom and stimulate an economic revival of the inner core of cities, as well as older industrial areas in smaller, more rural communities.

However, unlike previous approaches to site development that concentrated heavily on economic factors, the major feature of the Brownfields site redevelopment process is a holistic orientation that recognizes the importance of balancing economic factors with social and ecological factors. The concern here is with achieving site redevelopment that also contributes in some way to the overall sustainability of subsequent Brownfields processes, and ultimately to community development goals.

In this discussion, the term “site redevelopment process” refers to the specific restoration and reuse process of a site and not to the overall Brownfields redevelopment program or project.

4.1.7.1 PROGRAM FACTORS INFLUENCING THE SITE REDEVELOPMENT PROCESS

Site Redevelopment Program Factors

✓ Community Expectations
✓ Rationality
✓ Ownership
✓ Program Life Cycle
✓ Control of Development

A Brownfields site is the result of multiple and complex processes that affect the socioeconomic life of a community and the natural ecology that supports the community. These include economic decline, changes in residential and living patterns, increasing levels of social pathology (e.g. crime, drugs, etc.), a low market potential for the reuse of many sites, and the increasing degradation or loss of natural resources.

During the course of this study, a number of factors specifically affecting the sustainability of the site redevelopment process have been identified.

Community Expectations - A Brownfields site takes time to redevelop and this contradicts the desire of a community to see a quick result that addresses a large number of needs simultaneously. The general public often does not appreciate the number of steps involved, the fiscal and structural limitations on what the process can accomplish, and the time needed to carry out the process. The result is often a growing dissatisfaction with the project and a resulting loss of long-term support. The development of realistic expectations on the part of the affected community is frequently cited as a key-contributing element to project sustainability.

Rationality - One of the more important influences on the attempt to attract new development for Brownfields sites is that despite a growing shortage of developable land, the market has not shifted sufficiently for the redevelopment of Brownfields sites to be competitive with greenfield sites. In part, this is due to a failure to capture the entire cost of development, including infrastructure and environmental costs

(cyclical rather than linear), from the potential developer. Subsidized development occurs in the suburban fringe areas, but is absent from the inner city. The older city structure is often assumed to have an edge in infrastructure development, but this infrastructure is often insufficient to support modern development.

The key issue, from a business standpoint, is that a rational decision to expand or acquire new space would favor a greenfield site. The site is clear, the associated risk and costs are low - especially if infrastructure costs are subsidized with public funds – and the time required for development is significantly reduced. In order to attract development to Brownfields sites, a corresponding value must be offered as an incentive to counter-balance the advantage of greenfield development.

Ownership - There are a number of reasons why Brownfields sites have not been redeveloped. Chief among them is site ownership. In some cases owners simply do not have the money to redevelop the site. In others, owners do not want to lose the land because they have some sense of its potential value, but do not really understand the real estate marketplace or the reality of the costs of contamination. Estate issues related to the death of one owner or one member of a partnership can also present problems. The potential value of the property as a leverage to secure credit for other transactions may be an impediment to sale of the property. In many cases it is also difficult to track down absentee owners.

The resistance of current property owners and the cumbersome requirements necessary to transfer or acquire a property pose a significant obstacle to the Brownfields redevelopment process. This is because the unused or underused property continues to deteriorate while past or current owners are being recalcitrant or cannot be located. One criteria that has been used in the selection of potential candidate sites for many Brownfields projects is a determination of the relative effort required to obtain transfer of the property (or ownership) for redevelopment.

Program Life Cycle - It would be reasonable to expect that as the Brownfields program develops and expands over a number of years, the increasing experience with the process would lead to greater efficiency and reduced costs. This would result in a corresponding decline in the amount of public revenue needed to continue the development process. However, this may not necessarily be the case. The potential for ever-increasing cost and complexity in the redevelopment process may also increase as the program matures. Candidate sites in the earlier stages of the program will most likely be those that present relatively straightforward contamination problems and have good market potential. But, in the later stages of the community redevelopment program, the number of available sites with good potential will dwindle. As a result, the program will need to address sites with more problems that are less attractive for redevelopment. The costs of success at these sites will be increased as a result. In order to maintain a sustainable program, the community may have to allocate more rather than less public funding to accomplish the same result in the future.

Control of Development - Where a Brownfields redevelopment has been successful, the success may have a tendency to attract additional development to the affected neighborhood or community. This development may not necessarily be controlled by the same criteria as are established for the sustainability of the Brownfields project, since this development is not directly associated with a Brownfields site. As a result, the success of the Brownfields project may cause a development boom in the surrounding area that is essentially not sustainable or ecologically sensitive. The incorporation of the Brownfields project into a comprehensive economic development plan for the community is critical to avoiding this type of impact.

4.1.7.2 ECOLOGICAL FACTORS INFLUENCING THE SITE REDEVELOPMENT PROCESS

Site Redevelopment Process - Ecological Factors

- ✓ Eco-Industrial Parks
- ✓ Reclaimed Brownfields for Parks & Open Space
- ✓ Greenspace as Interim Use
- ✓ Reclaimed Brownfields in Ecologically Sensitive Areas
- ✓ Landscape Design Factors

Since Brownfields sites were once active industrial or commercial businesses, redevelopment strategies for these sites typically focus on rehabilitating them into vibrant new commercial or industrial uses. But new strategies are needed for many sites to prevent them from reverting back to Brownfields and to contribute to sustainable growth in the community. One strategy is to link the intended land use and architectural design with ecological and aesthetic qualities valued by the community. This strategy applies to urban as well as rural Brownfields sites.

Several approaches were identified through the research that apply this strategy and thereby promote the sustainability of Brownfields site redevelopment.

Eco-Industrial Parks - Basically, an eco-industrial park is a combination of manufacturing and service businesses designed to coordinate their collective resource needs and processes in order to increase efficient use of raw materials, minimize waste outputs, conserve energy and natural resources, reduce transportation requirements, and provide an aesthetically attractive place to work. This resource efficiency means economic benefits for the businesses. The community benefits from improvements in ecological quality and creation of jobs. Two types of eco-industrial parks are emerging as viable options for Brownfields sites: virtual and zero-emissions or closed loop manufacturing (Spohn, no date).

Virtual eco-industrial parks represent networks of related regional companies not physically located in the same complex. By coordinating services and processes, and

in some cases combining them, the companies can create an economy-of-scale that results in cost savings and decreases ecological impacts. Networked businesses located within a common region reduce transportation costs and create waste exchanges that can realize savings in solid waste and hazardous waste disposal costs.

Zero-emissions or closed loop manufacturing parks focus on the total elimination of wastes. Companies are co-located to share energy, water, and other resources, and to recycle low-value byproducts. By careful design and cooperation, firms can coordinate their production processes and infrastructure needs to maximize efficiency. Examples of this type of eco-industrial park include Cape Charles' Sustainable Technologies Industrial Park, and the Volunteer Site's National Sustainable Development Laboratory outside Chattanooga, which test innovative remediation technologies and foster linkages and research in recycling or reusing sustainable buildings.

Reclaimed Brownfields for Parks and Open Space - Creating parks, gardens, greenways, trails, and open space can be very effective and an inexpensive way to catalyze sustainable redevelopment of infill properties. Because people do not frequent greenways as often as business or residential areas, they are more amenable to alternative remediation strategies. These strategies include bioremediation, phytoremediation, and natural attenuation that are well suited to sites of low level contamination with little risk of chronic health exposure. These low cost remedial alternatives can create an attractive site that stimulates increased property values surrounding it. This can result in increased tax revenues (which could offset the remediation costs) and greater market demand to redevelop nearby properties. In addition, parks can generate revenue from user fees, concessions, boat/bicycle rentals, etc. This approach is especially effective for blighted properties that are not otherwise economically beneficial for redevelopment.

Greenspace as Interim Use - In certain situations like small or isolated parcels, an effective approach to redeveloping a Brownfields site is to convert it into an urban forest, park or garden on an interim basis until the parcel can be integrated into a larger redevelopment plan for the area. Urban trees provide \$4 billion in energy savings each year (i.e. through shading and cooling) and this saving could be increased if trees were strategically planted (Moll, 1995). Urban forestry programs include actively promoting the planting of new trees as well as the reforestation of urban areas where die-out of trees has occurred. Urban parks and gardens serve as places for community reflection and recreation, thereby enhancing the quality of life of its residents. Additionally, urban parks and gardens contribute to cleaner air quality and can become valuable tools for achieving a community's air emission compliance requirements.

Reclaiming Brownfields in Ecologically Sensitive Areas - Restoring Brownfields to blend into the surrounding ecological systems offers many indirect benefits to sustainable communities. For instance, a key component of the Cape Charles, VA Brownfields project is to restore portions of the Brownfields site into coastal wetlands and beach dune areas; a major natural feature on the surrounding landscape. These areas will be incorporated into wildlife preserves and protected habitat areas that will attract a variety of native and migratory bird species, among other types of wildlife, which will become a focal point for environmentally-sensitive ecotourism businesses within the community. The objective is more wildlife, more people, more jobs, more growth.

Landscape Design Factors - Integrating Brownfields design and land use with natural landscape features builds sustainable links between the redevelopment and the ecology. In Providence, RI and Chattanooga, TN, the communities are using the riverfront as the central attraction to anchor redevelopment of adjacent Brownfield sites. In Cape Charles, the Sustainable Technologies Industrial Park has been architecturally designed to balance with the surrounding natural landscape. The industrial building complex incorporates solar energy technology, native vegetation,

fresh water streams, marshes, and earth-tone building designs to blend into the landscape for greater aesthetic appearance and value.

4.1.7.3 SOCIOECONOMIC FACTORS INFLUENCING SITE REDEVELOPMENT

Socioeconomic Factors Influencing Site Redevelopment	
✓	The Right Property
✓	The Right Use
✓	The Right Incentives

The Brownfields redevelopment process should contribute in some way to the overall sustainability of the community, as a community. To a great extent, the design parameters for an individual project will be affected by the site characteristics, the influence of surrounding land uses, and the goals of the comprehensive plan. But the proposed reuse of the subject site should also conform to the overall vision of the community's economic and social future.

Several socioeconomic characteristics of a Brownfields project have been linked to the potential for sustainability. From the standpoint of the project itself, the most important factors contributing to overall success can be summarized as: 'the right property, the right use, the right incentives.'

The Right Property – There is one important characteristic associated with successful redevelopment properties that also applies to a Brownfields redevelopment; the property must have some value. In the case of the Brownfields site, this value is calculated in terms of the desirability of a clean site at the current location.

Several factors can influence this determination. Especially important is the value and use of surrounding real estate. It may be more difficult to attract certain types of

investors to properties in areas of the city that are severely depressed or exhibit a high crime rate. The surrounding land uses should be compatible with the proposed project. Also important is the level of stability in the surrounding neighborhood. Potential investors will be concerned with establishing some certainty that they know what the neighborhood will look like in the future and that the neighborhood is not in a constant state of change.

The cost of the initial acquisition of the property, and the level of environmental uncertainty associated with the project, are expected to have an influence on the project. These costs should be in line with the intended use and the uses of the surrounding properties. For example, if the anticipated revenue (profit in the case of a private development) generated from any proposed redevelopment will not be sufficient to ultimately cover the cost of the site purchase plus remediation, some source of external funding will be necessary in order to sustain the development.

Other factors to be considered, especially for private development (Skowron, 1998) include:

- site visibility, ease of access, traffic count and population density – for a potential retail site;
- the quality and character of adjacent structures - for a potential residential site;
- labor force availability, access to customers and suppliers, and an airport hub – for an industrial site; and,
- transportation access, modern utilities and other infrastructure, topography and soil conditions (flat sites are preferred), and proper zoning - for any site.

As previously noted, the importance of ownership to the ongoing success of a site redevelopment relates to the maintenance of project continuity and flow. Difficulties in identifying absentee landlords, acquiring ownership through public taking, or other estate considerations (in the death of an owner) can severely hamper

progress and may ultimately cause a project to fail. Important to the site consideration is the presence of a known owner who is willing to participate with the program, either by sale, or some other ownership transfer arrangement.

There are also many good reasons to select a property that may not be easily remediated or may have less than desirable redevelopment qualities. The property may be important, not because of the quality of the property itself, but because it is centrally located or is part of another parcel, or when combined with another parcel may collectively become important. It may also be important to the development of other adjacent parcels, or other projects in the nearby area.

In many cases an urban infill development may be a highly sustainable Brownfields candidate site. Urban infill development on individual building lots enables a Brownfields program to grow and evolve through a series of small and incremental additions and changes. It is especially useful in areas where existing businesses require space for expansion, or where restoration and reuse of historic districts, and the linking of sustainability to historic preservation, are important. (Beatley and Manning, 1997).

The Right Use - Determination of the right land use for a candidate site is critical to the overall sustainability of the process itself and its final outcome. Important to this process, in addition to site history and surrounding land uses, is the role of the community in specifying its needs, values and most especially, its understanding of the project and its role in the community. Significant delays in implementing the final plan can result from the resistance or lack of cooperation of community residents.

However, a number of project participants also cautioned that the community should not necessarily be the sole determinant of the future use of the property. A high community priority may not necessarily be a highly marketable redevelopment

priority. The community's preferences may also be too narrowly focused. The process of determining future site use must be a balance between the community's values, the values of the market, and the values that will attract a specific developer.

The Right Incentives - As noted earlier, one important consideration for the success of a site redevelopment is the continuing attractiveness of greenfields. The sustainability of a Brownfields project depends on the successful development of incentives and trade-offs to increase the potential value or return on a Brownfields redevelopment.

Incentives are also important to several groups of stakeholders involved in the redevelopment process. These stakeholders include:

- owners as an inducement to sell or cleanup existing contaminated property;
- developers in order to increase the potential return on investment from a Brownfields redevelopment by increasing financial opportunities and decreasing uncertainty;
- lenders or investors who will need to balance the value of investment in a Brownfields redevelopment against other real estate or market investments; and
- the community in the form of what encourages people to patronize or support the intended use of the property over the long term.

In general, there are several forms of incentives. These incentives will often be specific to the individual project or its participants. Direct subsidies in the form of public or private grants to cover specific activities associated with the Brownfields redevelopment are the most visible form. Also, frequently used are tax credits, either to encourage development or as an inducement to increase employment in the local community. Overlay districts such as Enterprise Community or Empowerment Zone designations are also a strong inducement to development. One of the most

important incentives from the standpoint of the lender, investor, or developer is the presence of mechanisms for insurance or indemnification against uncertainty.

A powerful incentive to ensure continued community support of the project is the strength of the public involvement program. The more the community feels a sense of participation in the planning and decision making process, the more it will develop a sense of ownership and identification with the proposed project, and a corresponding sense of community pride associated with it.

In all cases, the sustainability of the proposed project depends greatly on the marketing skills and strategies employed to develop a rationale for a business or industry to move into the central city or to reuse an existing rural development site. For the public in general, the greater accessibility of daily life services and the potentially increased opportunities for recreation and cultural activity in the central city represent a potential incentive to consider Brownfields properties.

4.1.7.4 SITE MARKETING

In the process of gathering information from project participants, one of the most frequently cited problems associated with a Brownfields redevelopment is the process of marketing the development site to potential developers. Site marketing includes not only the process of selling the redevelopment project to potential developers, investors, or lenders, but also to the community as a whole.

The community will be the ultimate beneficiaries of the proposed activity, as well as the ultimate consumers of whatever product, service, or facility is proposed for the site. The important consideration is the analysis of the current market structure of the community (e.g. labor, housing, consumer) to determine what the current trends are and what is supportable.

The role of prevailing market forces in the long-term sustainability of a Brownfields redevelopment is often overlooked. It is essential to examine both the macroeconomy and the microeconomy of the local community. The question for a Brownfields redevelopment is that of balancing community values and goals against the requirements of the marketplace and what the market will bear and support. In addition to the carrying capacity of the natural environment, the carrying capacity of the economy becomes an important consideration, not only for what can be accomplished, but also for when. The timing of the development project, as with any economic investment, is often critical to its long-term success.

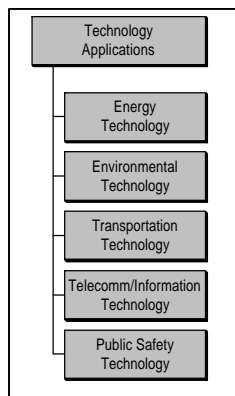
Market conditions, especially real estate conditions may also influence the final value of a clean site, thus dictating the range of development options available. An understanding of the real estate market is important to match the right property to the right development use, and to know what catalysts are needed to stimulate the development of the property.

The specific market analysis for a given site includes three key components: market supply, market demand and revenue projections (Skowron, 1998). The analysis of supply examines the existing quantity of similar type development in the target market, by type (e.g. office, retail, residential, etc.). Current vacancy rates are also determined. The result is then tested in comparison with the current absorption rate, or the amount of the total that was used over the past few years.

Analysis of the result indicates both the demand for the type of facility proposed and the currently available quantity of that type of development. On this basis, a more accurate picture of the actual need for the proposed facility can be determined. For example, if current demand is low and vacancy rates are high, the proposed development will be extremely difficult to market, no matter how much effort is placed on site cleanup and restoration.

Once the need for a proposed facility has been established, current sales, rental and employment figures for similar projects can be obtained. Examination of these figures will form the basis of potential revenue projections associated with the proposed development. If the potential rate of return calculated for the developer is not competitive, a determination can be made for what level and types of subsidy may be required can be made.

4.1.8 Technology Applications



Since the beginnings of the human species, science has provided the knowledge, technology, and practical means for obtaining our shelter, subsistence, security, and social amenities. The raw materials of technology, energy and natural resources have either been considered as infinite in their supply, or as replaceable with the help of new, alternative technology. As the size and density of our communities grew, technology has evolved to provide greater speed, variety, cost savings, and effectiveness in the consumption of energy and natural resources.

More efficient and effective extraction, processing, transportation, manufacturing, distribution, and communication technologies enable us to keep pace with population growth and demands. However, we have come to realize there are limits. “From the extraction of raw materials, through wasteful production processes that produce toxic by-products, to products with very limited utility, and ultimately, to waste which accumulates in landfills, our current system of manufacturing and using products is a one-way street...unless you’re talking about a system in which there is unlimited resource availability and unlimited waste disposal capacity, producing, consuming, and discarding goods in this straight-line way is obviously not sustainable” (Nelder, 1997).

Technology and its application are clearly major elements of sustainability. The process of identifying, developing, evaluating, and integrating new technology applications into community redevelopment provides opportunities to achieve significant cost benefits for projects and quality of life improvements for the residents. This process can also help change traditional social, economic and ecological perspectives and values that contribute to unsustainable development.

As technology is adapted and applied to address our immediate needs for material resources, energy, a healthy environment, security, and convenience, it can also be evaluated in terms of providing the quality of life we want for future generations. The key is to make the technologies cost effective to the communities and developers, and to foster community confidence in the technologies through education and experience with their benefits (Chattanooga Site Interviews).

The Public Technology, Inc. (PTI, 1998), a non-profit organization supporting city and county governments nationwide, has identified five primary areas of technology that provide an effective framework for categorizing the characteristics of technology applications that promote immediate and sustainable Brownfields redevelopment in urban and rural communities. These areas are energy, environment, transportation, telecomm/information, and public safety.

4.1.8.1 ENERGY TECHNOLOGY

Energy Technology

- ✓ Reducing Energy Demands
- ✓ Renewable Energy

Sustainable Brownfields redevelopment seeks to improve energy efficiency, conserve energy resources, reduce energy demands, cut costs, and develop revenue from local energy assets. Energy consumption is therefore an effective indicator for measuring sustainability.

Reducing Energy Demands - In Chattanooga, the city has integrated energy efficient and non-polluting electric buses into its plan for redeveloping the downtown core. The system provides three public parking lots on the city fringe to reduce traffic and maximize land use for greater revenue producing commercial businesses downtown. The electric bus system shuttles people into and around the downtown core through a fast and convenient routing plan. Revenue from the parking lots is used to subsidize free and unlimited shuttle bus ridership. The system has become a source of community pride and a social gathering place of business people, merchants, visitors, and consumers.

Renewable Energy - In Cape Charles, the community has linked solar cell technology into its sustainable technologies industrial park, by including a solar cell manufacturing company as one of the anchor tenants and by incorporating solar cell technology into the design and construction of the office park complex to achieve energy savings.

4.1.8.2 ENVIRONMENTAL TECHNOLOGY

Environmental Technology

- ✓ Industrial Ecology
- ✓ Eco-Industrial Parks

- | |
|---|
| ✓ Pollution Prevention and Waste Minimization |
| ✓ Site Assessment and Remediation |
| ✓ Ecological Monitoring and Assessment |

Many new and innovative environmental technologies are emerging to promote community sustainability and sustainable Brownfields redevelopment.

Industrial Ecology - The fundamental concept of industrial ecology is that society must balance its accounts of materials and energy. The ultimate goal of industrial ecology “is to minimize harmful wastes and to reuse to the greatest extent both industrial products themselves and wastes” (Kneese, 1998). Jesse Ausubel (1998) identifies five key means by which industrial ecology can lessen the impacts – zero emissions, materials substitution, dematerialization, decarbonization, and function economy. His technological methods for achieving progress include materials flow and balance analyses, life cycle analyses of products, and analytical indicators such as intensity-of-use and waste-to-product ratios.

Eco-Industrial Parks – The practical application of industrial ecology is the eco-industrial park, see Section 4.1.7.2. The design of these parks is based on how natural ecosystems function. The principle being that “a closed-loop of energy and waste is more efficient and sustainable than a system viewing each in isolation” (Burlington, VT, 1997). Just as in natural ecosystems, where all organisms are inextricably linked to each other and to the surrounding physical processes, the objective of the eco-industrial park is to link technologies, processes, products, and industries. This will achieve environmentally sound development, stable economic markets, job creation, and new values and uses for traditional waste products. Several communities are incorporating eco-industrial parks into their sustainable Brownfields efforts including, Burlington, VT, Buffalo, NY, and Cape Charles, VA.

Pollution Prevention and Waste Minimization - Process engineering is refocusing on waste minimization with the goal of creating closed-loop manufacturing processes and recyclable or reusable materials and products. For example, the Burlington, VT Pilot Project is investigating alternative, high strength waste to product technologies such as bioshelter materials, fish food and fertilizer production products. The Green Project, a local community-based program in New Orleans, is promoting the recovery, reuse and recycling of paint and other home building products. The Navajo Nations Pilot Project is planning to reuse the building and machinery from a former lumber mill as the basis for a more efficient mill operation.

Site Assessment and Remediation - New applications of analytical instrumentation in the field are enabling owners and communities to more quickly, accurately, and less expensively characterize the nature and extent of site contamination. Examples include x-ray fluorescence for lead and other metals in soil, immunoassay test kits especially for PCBs, field GC/MS methods for organics, and mobile analytical laboratories used in the New Orleans and Illinois Pilot Projects. Innovative materials and technological methods are also enabling site remediation techniques to be integrated into reuse designs. Examples are:

- the semi-porous membrane parking lot at the Foundry Site sports stadium in Chattanooga;
- the use of onsite petroleum waste from leaking underground storage tanks for the asphalt used to repave the Buffalo, NY Pilot Project site along the waterfront;
- air sparging of contaminated groundwater in Cleveland, OH; and
- the use of phytoremediation in Trenton, NJ.

These technologies are not only as effective (or more so) than traditional excavation/landfilling and pump-and-treat in achieving the targeted cleanup levels, but because they can be designed into the ultimate reuse of the property, they directly promote long-term sustainability of the project.

Ecological Monitoring and Assessment - New remote sensing, Doppler radar, and global positioning satellite (GPS) technologies are enabling environmental scientists to identify, monitor and evaluate changing conditions in the ecosystems' health. These conditions include trends in global temperature changes, ocean currents, and surface water flows, forest cover, animal migrations, desertification, etc. These technologies can enable a community to develop its comprehensive baseline profile of ecological conditions and urbanization, and to monitor changes to the environment based on its land uses and trends, in order to evaluate and make changes to assure its sustainability.

Other examples of environmental technologies that create job opportunities and other community benefits include:

- the hydroponics facility being developed on the Buffalo, NY Pilot Project site to create an environmental-friendly means of producing tomatoes all year long in northern climates; and
- biotechnology to create resistant strains of food sources, alternative food sources, enriched food sources, and human health dietary supplements and medications.

4.1.8.3 TRANSPORTATION TECHNOLOGY

Transportation Technology

- ✓ Intelligent Transportation Systems (ITS)
- ✓ Alternative Fuels & Vehicles

Transportation technology entails transportation systems and the various modes or “hardware” to move people and goods. Two specific characteristics of transportation technology that can be associated with sustainable Brownfields redevelopment were identified in this study’s research, although many more may exist.

Intelligent Transportation Systems (ITS) - ITS involves the use of advanced computer, electronics, and communications technologies to increase the effectiveness, efficiency, cleanliness, and safety of surface transportation systems. An ITS would be supported and integrated into an Intelligent Transportation Infrastructure (ITI) that includes:

- traffic signal control systems;
- freeway management systems;
- transit management systems;
- incident management systems;
- electronic fare payment systems;
- regional multi-modal traveler information centers;
- railroad signal control systems; and
- emergency management systems.

Though still theoretical, the benefits of an ITI/ITS would be reducing travel time, accidents and congestion; providing better information, increased customer satisfaction, and enhanced quality of life; and additional opportunities for new “environmentally-clean” businesses and intergovernmental cooperation (PTI, 1996).

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) encourages the use of ITS and provides funds to communities for

implementation. As a result, ISTEA funding is a viable alternative for communities that integrate these component technologies and systems into Brownfields redevelopment plans and urban strategies.

Alternative Fuels and Vehicles - Innovative applications of natural gas, electricity, and other alternative fuels to power privately owned and commercial fleet vehicles is growing in public acceptance and economic feasibility. Brownfields redevelopment can incorporate these vehicles and their businesses into community-wide and regional multi-modal strategies, land reuse, and marketing efforts to further sustain the project and community. An excellent example is Chattanooga's electric shuttle buses. These vehicles also contribute to the ecological sustainability of the community by reducing CO₂ and particulate emissions, thereby promoting cleaner air.

4.1.8.4 TELECOMM/INFORMATION TECHNOLOGY

Telecomm/Information Technology

✓ Geographical Information Systems (GIS)

New telecommunication and information management technologies contribute to sustainable Brownfields redevelopment by improving services, cutting costs, and developing new businesses that are environmentally “clean” and readily adaptable to existing Brownfields buildings. Telecommunication and information distribution technologies facilitate public meetings, notices, and education of the community regarding Brownfields activities. This promotes community confidence and acceptance of proposed remediation and reuse plans.

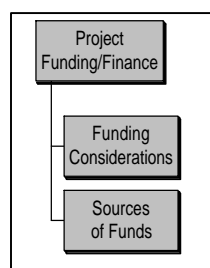
GIS - Information processing and management systems such as geographical information systems, commonly referred to as GIS, have become extremely

versatile and valuable tools. These tools enable communities to visually identify and map Brownfields sites or potential sites and to overlay them with municipal planning information, baseline ecosystem characterizations, and community demographics to create comprehensive databases. GIS applications have been incorporated into many of the Brownfields projects analyzed. The ease by which these databases can be maintained and updated to provide graphical representations of ecological, economic and social changes in the community are the key to their role in promoting sustainability.

4.1.8.5 PUBLIC SAFETY TECHNOLOGY

Public safety and health is a primary community concern. There is a wide range of evolving trends and capabilities in safety technologies. From simple community alarms, air quality monitoring systems, fire suppression systems, and security monitoring systems to complex infrastructure and building code developments (e.g. earthquake resistant buildings and water treatment methods). These trends can promote Brownfields sustainability by enhancing the marketability of a site and reassuring the community's confidence that safety and health risks are effectively addressed.

4.1.9 *Project Funding/Finance*

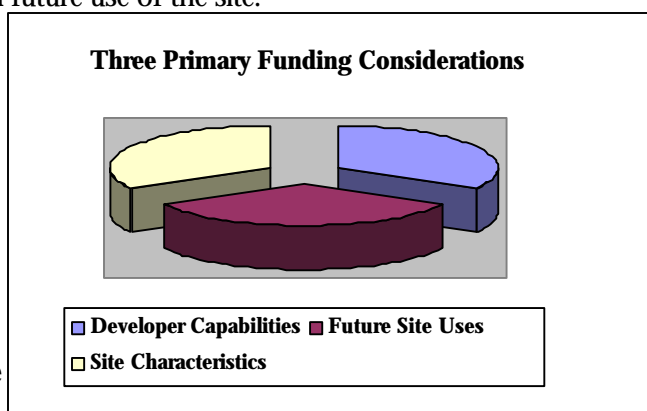


The association between long-term financing and the sustainability of a Brownfields redevelopment project is fundamental. Access to equity financing and early-stage capital is often considered not only to be the most important factor in a project, but also the most difficult to secure (Brookings, 1997). A number of project participants interviewed have indicated that analyzing the funding needs of a project, and identifying and confirming the long-term funding sources early in the redevelopment cycle, is a key component of the continued success of a project.

Conversely, the under commitment of resources and a lack of funding were considered a major impediment to the redevelopment of a Brownfields site.

Although the ultimate goal of public support to the Brownfields redevelopment process is to minimize and eventually eliminate the use of public funds, most of the projects examined as a part of this study utilized a combination of public and private funds to provide the financial basis for the project's continued operation. In the more successful projects, public funds were utilized as an impetus or catalyst to initiate the project effort and provide the seed capital with which to leverage other non-public foundation grants, and private investment. The goal is to define a pivotal point at which the project is shifted from a reliance on public investment to a point where private investment and market forces can take over.

Brownfields project funding requirements can be seen as a continuum ranging from a project that is expected to be ultimately self-sustaining within the private marketplace to one that is completely supported by public funds throughout its anticipated life-cycle. The mix of private and public funds embodied in a Brownfields redevelopment project will differ from project to project, based on the characteristics of the specific site in question, capabilities of the current owners, and the planned future use of the site.



In the case for example, the anticipated income and subsequent rate of return on the developer's investment may be sufficient to cover the initial cleanup and redevelopment along with the ongoing operations costs. Public or non-profit grant funds may be required for these

projects only for the initiation of the process, and for the development of marketing approaches and incentives to attract potential investors or developers. Once the private developer becomes involved, there is little further requirement for the infusion of public funds, except for those required to maintain any initial incentives provided as an inducement for private involvement.

At the other end of the continuum are those projects that are developed by the community itself, such as parks, greenspace development or the redevelopment of a site to provide a needed public facility (e.g. community center, recreational facility, museum, theatre, etc.). In these cases, the public investment will require that sources of income be provided to support the project during the redevelopment process and throughout the project life cycle.

Such projects normally can be expected to benefit the community and to generate revenue in the form of additional taxes from increases in surrounding property values, or from small private businesses that are created around the public facility, as well as user/admission fees paid by the facility itself. However, these increases in revenue are usually not sufficient to offset all of the costs of redevelopment and operation. As a result, publicly supported projects are usually only sustainable to the extent that the local municipal budget will continue to support them.

The location and specific nature of a Brownfields project site can significantly affect the financing considerations associated with site characterization. As noted earlier in this study, a number of sites will have sufficient positive features and the level of risk will be sufficiently calculable that they will very likely be candidates for private investment and cleanup. Here the anticipated rate of return will be sufficient to cover the necessary cleanup costs. These sites will be relatively easy to finance and will probably not require much, if any, additional influx of capital during the life of the project to maintain sustainability.

However, other sites will not be so attractive and will not have the benefit of being economically viable in the absence of outside funding. Limiting features may include such factors as concern for the safety of potential employees, customers or residents of the proposed new project, depressed economic conditions in the surrounding communities, the potential for long-term devaluation rather than appreciation of the property, or limited access to markets, transportation or other features. In addition to public funding as an inducement to development, additional subsidies (e.g. tax abatements, infrastructure improvements, or outright grants) may be necessary for several years following the initial start-up of the development.

A third factor affecting the mix of public and private funds required for the project is the capabilities of the potential owner or development entity itself. For private developments, the larger and more solvent the potential site developer or investor, the more likely they will be able to absorb the level of risk associated with a development. The importance of public funding as an incentive to encourage involvement or as a hedge against potential risk will be correspondingly diminished.

These three primary considerations, site characteristics, future uses, and developer capabilities describe a range of sites that for a variety of reasons will require some combination of public and private funds in order to achieve a sustainable development. The important aspect from the perspective of project sustainability is the maintenance of a continuous source of income, whether from public or private sources, or some combination of both, throughout the life of the project. In addition to a focus on the long-term funding of the project, there is a consideration for the immediate start-up as well. Most projects will not be immediately self-financing and will require, at least in the initial stages, some form of public finance.

4.1.9.1 FUNDING CONSIDERATIONS

The financial stability of a Brownfields redevelopment project is important to its long-term future sustainability. As noted, one key element of this process is to

identify funding requirements as early in the redevelopment process as possible and to elicit a commitment of funds from identified sources. Project funding takes time to develop and requires as much lead-time as possible. Critical funding gaps represent a primary deterrent to the redevelopment process, while carefully targeted financial assistance can help advance cleanup and reuse activities and “achieve significant economic, social, and aesthetic benefits” (Bartsch, 1996).

A structured financial package in the initial stages of project development provides a long-term basis for planning the project and assures that each phase of the project will not be delayed by shortfalls in resources. It also makes it easier to attract additional funding or investment (especially from private firms) by demonstrating to potential investors that a firm financial basis already exists. A well-organized project funding structure also provides the basis for project evaluation as redevelopment progresses. In this sense, it becomes a convenient checklist against which to evaluate project schedule and completion goals. Early detection of possible overruns and delays is also facilitated.

Brownfields redevelopment is more than a single process; it is composed of multiple elements, each of which must be funded, either separately or collectively in order for the program to succeed. Some of the more important project funding requirements include: site based remediation, site preparation, construction of new facilities, and other soft costs such as permitting, publications, etc. (Skowron, 1998).

Costs for infrastructure development and improvements are another consideration for Brownfields redevelopment. As noted during the project interviews, it is often difficult to find subsidies to address the potentially inadequate or antiquated infrastructure of urban areas. But, local governments in the suburban fringe are more willing to accept extensive subsidies for infrastructure improvements as part of the incentives built into the total development package.

Often overlooked, however, are such other important areas as the operational needs of the Brownfields management organization itself. As one project participant noted, once a Brownfields coordinator is hired, the salary and administrative costs for two years can take about one-half of the total EPA Brownfields grant. Other considerations include the resources required for the planning, public outreach, job training, community partnerships and site marketing processes. One of the most frequently overlooked expenses is the cost of acquiring financing itself. Grant and other proposals, although often prepared with volunteer labor can represent a significant expense, especially to a small project.

Essentially, the Brownfields redevelopment process can be characterized as five separate processes, each of which requiring some form of funding:

- the Brownfields program and program related expenses;
- site characterization and remediation;
- planning, public outreach and design approval;
- development and reconstruction; and
- long term operational support.

The long-term survival of the redevelopment effort and therefore its long-term sustainability are contingent on the ability of the project to adequately fund the resource requirements operative at each of these stages of development.

4.1.9.2 SOURCES OF FUNDS

For most of the projects considered in this study, and indeed for the greater majority of Brownfields redevelopment projects, the initial project funding will come from

public sources. These sources provide the necessary resources to initiate and accelerate the redevelopment process. However, a sustainable project cannot depend solely on external resources.

Important to the long-term success of the project is the process of defining where the project is going, in terms of its long-range goals and then identifying funding that supports what the community has decided to do. One cautionary note provided by a respondent during the site interviews was that it is too easy to let the availability of grants set the priorities and direction of the project, causing the project to lose site of its original goals.

Another important consideration is that project planners, the community at large, and especially, the affected neighborhoods should understand the project in terms of its financial requirements, and should also understand the business perspectives of the key participants, lender, developer, current and previous owner, etc. In addition to community awareness and participation, other preliminary activities associated with the process of securing financing for a project include:

- a comprehensive needs assessment or marketing study for the community and especially the neighborhoods immediately surrounding the site;
- prioritization and ranking of relevant community issues;
- identification of relevant environmental regulations and compliance issues;
- development of a design and plan for the construction of any capital facilities;
- the identification of revenue sources.

Identification of the sources of public funds will include a mixture of Federal, state, and municipal mechanisms including grants, tax incentives, or loan funds. Federal programs that are amenable to Brownfields funding requirements are sponsored by agencies such as EPA, HUD, DOT, DOC, and SBA among others. State funding may be available through environmental or economic development agencies, as well

as certain tax programs and revolving loan funds, depending on the individual state. Local initiatives may also include grant or other incentive programs, in addition to tax increment financing programs which are attracting increasing attention (Bartsch, 1998).

Of particular interest for Brownfields type redevelopment projects are the use of tax increment financing (based on the assumption that redevelopment of a property will increase its future value and that this new value can be used to raise public sector revenue to finance the project) and revolving loan funds (the initial capitalization of the fund is cyclically reimbursed through the payback of principal and interest from loans made by the fund). These initiatives offer the possibility for long term continuity of funding for multiple individual projects while at the same time potentially increasing the total level of funding available.

In both cases, there is an emphasis on continued sustainability through reinvestment of the proceeds of redevelopment back into the community. With tax increment financing, the reinvestment is made by earmarking future tax revenue increases for the repayment of bonds floated by the municipal or state government to fund the immediate needs of the project. Essentially, sustainability here is maintained by borrowing from future revenues. For revolving loan funds, the proceeds of the loan, or literally the return on the community's investment, are returned to the fund to be recycled as a new loan for continued redevelopment; effectively using the revenue generated by one project as the seed capital for another.

One of the more important strategies for identifying public sources of funding articulated during the project interviews was that of fractionating or separating the project into key or component parts. As noted earlier a Brownfields project is complex and composed of multiple elements (i.e. land use planning, environmental remediation, real estate development, community economic development, job

training and creation, etc.). Each of these elements represents both a community of interest within the larger community; and a source of targeted public funds.

By fractionating the project, individual sources of public funds can be identified to finance the cost of a small portion of a much larger project. This strategy has been used successfully by a number of communities to assemble a package of multiple Federal, state, and non-profit grant and funding sources directed toward specific aspects of the overall program, but which together form a piecemeal funding structure that finances the total project. One good example of this approach is evident in the Cape Charles project where a combination of Business Enterprise, DOI, NOAA, and other grants have been used to augment parts of the total community redevelopment plan.

The mix of funding sources for the Brownfields redevelopment effort also includes identification of private sources of investment. A generic listing of some of these sources includes:

- property owners or other responsible parties who may provide funds for cleanup as part of a settlement either before, in lieu of, or after the transfer of the property for redevelopment;
- prospective purchasers or developers who may include the costs of cleanup and site restoration as a part of the proposed cost of any new development;
- equity investors, whether individuals, partners, mutual funds, or real estate investment trusts, who may find themselves in a cash rich position and are looking for new sources of investment;
- commercial banks who may provide sources of funding as a part of a business development loan or mortgage; and
- private foundations and universities, especially those interested in some aspect of the project such as environmental restoration, low-income housing or those with a larger community orientation.

A representative of the real estate banking industry in New Orleans provided some insights into the perspective of commercial banks with respect to financing Brownfields site redevelopment. There is a need for project participants to understand the process that the bank has to go through to get a loan paid (e.g. how to identify risks, review loan underwriting criteria, loan processing, and repayment). Repayment of the loan is the major issue for the bank. There must be a sound basis for repayment - sufficient cash flow and some long-term equity component. The main focus is on collateral value or the ability of the bank to foreclose. The bank will also look at the included grants and loan guarantees.

Because each site has many different potential uses and associated strategies for redevelopment, it is also important to address the viability of investment in all of the possible redevelopment strategies before the investment is made. Banks have learned that it is not just the property, it is also the surrounding land area that makes the difference in a loan. In this sense, the project becomes a community investment.

The level of contamination is also of concern and has scared off investors haphazardly in the past. In order to meet the requirements for a loan, the project will normally be expected to provide for:

- full cleanup to expected land use requirements;
- Phase I and Phase II assessments on a limited use project; and
- assurance of the adequacy and competency of the cleanup.

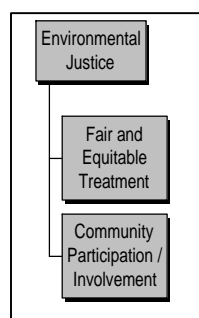
Limited cleanup to risk-based re-use development levels is possible, but poses an additional capital expense and line items – risk varies on case-by-case basis.

Of particular concern to the private investment community are the economic viability of the asset and the degree of liability associated with the investment (See

Section 4.1.6). But, the single most important characteristic of a Brownfields redevelopment that will stimulate private investment is demand for the site (Henry and Muller, 1996). Banks and other investment institutions will be reluctant to place money in a property that is not in demand. In order to secure private financing for the ongoing redevelopment of a property, it is essential that the property be carefully evaluated for its potential marketability, or in essence, the extent to which someone wants it.

Project funding is a critical component associated with the potential sustainability of a Brownfields redevelopment project. Based on the prevailing site characteristics and the anticipated future uses of a proposed site, a mixture of private and public funds will be required for development. On the basis of the funding sources identified, Brownfields projects can be categorized into three types, those funded primarily by private organizations, those funded by public entities, and those that are a mixture of public and private funds. Important characteristics associated with sustainability are the early and accurate identification of financing requirements, a high level of community awareness and knowledge of the financing process and the careful preparation and analysis of the project characteristics as a part of the overall strategy to attract outside investment.

4.1.10 Environmental Justice



In recent years, concern has been raised that persons from low-income and minority communities are suffering a disproportionate burden of adverse health consequences from the siting of industrial plants and waste dumps at nearby locations, and from exposures to pesticides and other toxic chemicals within their home and occupational environments. There is also concern that the environmental programs and policies being established by governmental agencies were not adequately addressing these disproportionate exposures. The President's Executive Order 12898 (EO) entitled "Federal Actions to Address

Environmental Justice in Minority Populations and Low-Income Populations” issued February, 11 1994 directs Federal agency officials to examine how agency activities and policies affect the nation’s minority and low-income populations. As a result of this EO, the term “environmental justice” was formalized.

EPA defines environmental justice as the “fair treatment for people of all races, cultures, and incomes, regarding the development of environmental laws, regulations, and policies” (Environmental Justice Homepage, 1997). A subcommittee of the National Environmental Justice Advisory Council (NEJAC), a Federal advisory committee to EPA, states “The vision of environmental justice is the development of a holistic, bottom-up, community-based multi-issue, cross-cutting, integrative, and unifying paradigm for achieving healthy and sustainable communities – both urban and rural” (NEJAC, 1996). Thus environmental justice can be seen as a far ranging attempt to ensure the equal distribution of costs and benefits of Federal government policies and actions that have environmental ramifications.

EPA's Action Agenda (USEPA 1995 (a)), incorporates environmental justice as an integral component of the Brownfields initiative. As it relates to a community redevelopment activity, the application of “environmental justice” is called for where there is concern of an environmental inequity. The tendency for Brownfields properties to be concentrated in communities inhabited by minority and low-income populations indicates that a concern for environmental inequity is a major consideration for the Brownfields process. By removing the contamination and conducting redevelopment efforts at the project site, the result is an overall environmental and social improvement. In this way, the implementation of a Brownfields redevelopment project can be seen as a remedy to address issues of environmental inequity, and thereby promote environmental justice.

It is difficult to discuss Brownfields redevelopment efforts without incorporating environmental justice considerations. As stated by the National Environmental Justice Advisory Council:

“Environmental justice and Brownfields are inextricably linked: the inescapable context for discussion of the Brownfields issue is environmental justice and urban revitalization. At the core of a justice perspective is recognition of the interconnectedness of the physical environment to the overall economic, social, human, and cultural/spiritual health of a community. The vision of environmental justice is the development of a paradigm to achieve socially equitable, environmental health, and economically secure, psychologically vital, spiritually whole, and ecologically sustainable communities. To this end, Brownfields redevelopment must be linked to helping address this broader set of community needs and goals” (NEJAC, 1996).

The major characteristic of environmental justice as it relates to sustainable Brownfields redevelopment is: the requirement for community participation/involvement in the decision-making process. To the extent that there is community involvement, a corresponding measure of environmental justice can be anticipated. The key factors associated with community participation related to Brownfields redevelopment programs/projects (NEJAC, 1996; USEPA OSWER Action Agenda) can be summarized as:

- early, adequate and meaningful community involvement in the decision-making process;
- a group of stakeholders committed to effecting a change for the better;
- all parties having equal access to all information relating to the proposed redevelopment;

- honesty and integrity for all participants for dealings between stakeholders;
- willingness to negotiate in order to achieve the necessary balance for the final decisions so that ideally all participants see the results as a win-win situation.

The end result would be a situation where there is an equitable distribution of the costs and benefits of the chosen redevelopment plan, and no group would suffer from disproportionate adverse health effects associated with environmental agency policies or activities within the environment.

A related issue, that of gentrification, can also be important to the sustainability of the Brownfields redevelopment program/project. Gentrification is the immigration of middle-or-higher-income residents into a deteriorating or recently renewed neighborhood in association with local redevelopment. Often the incoming residents will also have ethnic or racial differences. This can present a number of advantages to community growth. However, if the situation is not handled effectively, it could create tension between the groups and destabilize the balance within the community. The sustainable approach requires a combination of total community participation and consensus building. The total community includes both the new incoming members, and the population originally present. Collaboration should be done in accordance with the key community participation factors described previously.

Environmental justice contributes to the sustainability of a Brownfields redevelopment project in a way that is somewhat unique when compared to that of the other elements. Brownfields tend to be located in close proximity to the neighborhoods of low-income and minority populations. When a redevelopment project is implemented in such a community, there will naturally be degrees of community and quality of life improvement experienced by the nearby residents. For this reason, project officials may conclude that environmental justice concerns

are automatically addressed as a part of project implementation. In some cases this may be true. However, it is important that empowered community participation (a key factor in assuring that environmental justice is achieved) be included as a part of the redevelopment implementation process. In the absence of this type of involvement, environmental justice issues may not be addressed in a meaningful manner, and ultimate sustainability of the project may be threatened.

4.2 Verification of Identified PECs

Because the Brownfields redevelopment process is a relatively new approach and the Brownfields Pilot Projects have for the most part not fully matured, information on project organization, activity, and accomplishments is somewhat inconsistent and limited to assessments of near-term success as opposed to sustainability over time. In fact, no Brownfields redevelopment project available for this study was ongoing for more than 5-10 years. As a result, it is not possible to develop the quantity and level of data necessary to fully verify the elements and characteristics of sustainability, or to establish definitively a statistical correlation between these factors and the long-term sustainability of a Brownfields project.

The absence of consistent and systematically derived quantitative information does not, however, completely preclude all forms of verification that might be available to a study such as this. Although determination of a direct correlation between the PECs identified and the long-term sustainability of Brownfields projects is not possible, verification of the potential for association between these two factors is conceivable.

The potential for association can be established by a qualitative analysis of the characteristics of these elements and the link between these characteristics and

the component factors associated with the concept of sustainability. This potential is then confirmed by comparing these elements and characteristics against the experience of real projects; in this case, through information developed from interviews with municipal government sources. This technique does not provide a definitive basis for the assertion that elements and characteristics are correlated with project sustainability, but it does provide the structural framework necessary to develop a model of those elements and characteristics that can be associated with the sustainability of a Brownfields project.

On the basis of the literature review, analysis of the fifteen Pilot Projects, and preliminary interviews conducted with EPA, other Federal agencies, and Brownfields project site personnel, ten major elements have been defined in Section 4.1 and associated with the potential for sustainability. The relevant social, ecological and economic characteristics associated with sustainability have also been described for each of these elements in the previous section.

In order to establish a basis against which to verify the association between these elements and the potential sustainability of a Brownfields redevelopment project, these analytical results were compared against the actual experience of individual municipal governments. Within the limitations of the scope of this study, this verification phase was initially confined to eight municipalities.

Interviews were conducted with officials of the municipal governments who were either directly connected with the coordination and management of the city's Brownfields program, or who exercised executive responsibility for the parent agency of a Brownfields program. The telephone interview sessions were structured according to the ten elements defined in Section 4.1. For each of the elements, the primary focus was to determine the extent to which the element was incorporated as a part of the respondent's approach to Brownfields

redevelopment. Also, the respondent's view of the relative importance of each element to the success or failure of the project was determined, as was the influence each element had on overall project sustainability.

Although historical data to support this study is severely limited in terms of the availability of completed sustainable projects, a few Brownfields Pilot Projects are currently reaching the point at which meaningful data can be derived. As a follow-on to this study, the next logical step would be to conduct a more detailed, systematic analysis of the Brownfields Pilots. This would be based on additional primary data sources acquired for a randomly selected sample of completed projects or projects that have reached the stage where a successful transition has been made from site assessment and clean-up to actual redevelopment of the facility or property. This analysis would serve to further support the model that is being developed during the second phase of this study.

For purposes of this study, the interviews with municipal officials have been conducted to accomplish two objectives. The first objective is to verify the existence of each of the elements and to determine their relative importance when associated with sustainability and successful Brownfields redevelopment. The second objective is to update and confirm data obtained from the detailed analysis of the fifteen Pilot Projects. This has been accomplished by inquiring of the respective respondent's information about the status or results of specific characteristics, processes, or examples identified in the Pilot Project database records.

Since four of the fifteen Pilot Projects are the subjects of on-site visits and personal interviews, the municipalities selected for the verification process consist of eight of the remaining fifteen, which are:

Bridgeport, CT; Buffalo, NY; Burlington, VT; Charlotte, NC; Cleveland, OH; Greenfield, MA; Oregon Mills Conversion, OR; and the West Central Municipal Conference in Cook County, IL.

THE RESULTS OF THE MUNICIPAL VERIFICATION ARE SUMMARIZED BELOW:

<u>Element</u>	<u>Percent Agreement Among the 8 Municipalities</u>
Community Profile	50% confirmed this element's importance to sustainability and critical role in achieving project success; the remaining 50% felt it was important for sustainability but not critical for success.
Comprehensive Planning	63% confirmed the element is important to sustainability and critical to success; the remaining 37% ranked it important but not critical to success.
Organizational Focus	88% confirmed the element is important to sustainability and critical to success; the remaining 12% ranked it important but not critical to success.
Site ID & Characterization	75% confirmed the element is important to sustainability and critical to success; 12.5% ranked it important but not critical to success; and, 12.5% ranked it not important or not relevant to their project.
Risk Management & Cleanup	63% confirmed the element is important to sustainability and critical to success; the remaining 37% ranked it important but not critical to success.

Legal/Regulatory Issues	63% confirmed the element is important to sustainability and critical to success; 25% ranked it important but not critical to success; and the remaining 12% did not rank it.
Site Marketing and Reuse	50% confirmed the element is important to sustainability and critical to success; 37% ranked it important but not critical; the remaining 13% ranked it appropriate for sustainability but not relevant to their project(s).
Project Financing	100% confirmed the element is important to sustainability and critical to success.
Technology Applications	37% confirmed the element is important to sustainability and critical to success; 37% ranked it important to sustainability but not critical to success; and 26% ranked it appropriate to sustainability but not relevant to their project.
Environmental Justice	37% confirmed the element is important to sustainability and critical to success; the remaining 63% ranked it important to sustainability but not critical to success.

Overall, with one exception, the eight respondents confirmed that all ten of the elements are important to the sustainability of a Brownfields redevelopment program or project. However, their presence and role in promoting the success of a program or project varies on a case-by-case basis. The single exception indicated that the Site Identification, Characterization and Prioritization element was neither

appropriate nor relevant to the Brownfields redevelopment process. This ranking was predicated on the respondents opinion that any such process would result in the creation of a formal list of sites that, because of their association with Brownfields, would automatically carry the stigma of contamination and therefore, would be avoided by developers and prospective buyers.

The respondents also provided descriptions and explanations of many of their processes, which verified many of the characteristics identified and defined in Section 4.1. The following table summarizes a number of key characteristics, according to their respective elements, that municipalities noted during the survey. In some cases, these characteristics directly verify those discussed previously in Section 4.1. Others are indirect verification or present additional variations on previously described themes.

Table 4.4: SUMMARY OF CHARACTERISTICS VERIFIED BY MUNICIPALITIES

	Community Profiling
	<ul style="list-style-type: none"> • Primary focus is on community/neighborhood needs
	<ul style="list-style-type: none"> • Community vision is more critical than historical information
	<ul style="list-style-type: none"> • Economic indicators applicable to the community need to be addressed
	<ul style="list-style-type: none"> • Market analysis is a key component
	<ul style="list-style-type: none"> • Ecological baseline data not as relevant to urban/suburban communities as it is to rural
	Comprehensive Community Planning
	<ul style="list-style-type: none"> • Brownfields need to be integral components of comprehensive plans
	<ul style="list-style-type: none"> • The variety of plans need to be integrated so their components support each other and make sense for the community
	<ul style="list-style-type: none"> • Existing community/neighborhood groups and networks should be used to feed into the planning processes
	<ul style="list-style-type: none"> • A mechanism or strategy for continual or periodic updating should be included

	Organizational Focus and Structure
	<ul style="list-style-type: none"> • Central organization should be at the local municipal government level
	<ul style="list-style-type: none"> • Brownfields are addressed by the local economic development and planning departments with environmental functions
	<ul style="list-style-type: none"> • Single point-of-contact is needed to generate working relationship and mutual understanding and trust with development/financing communities
	<ul style="list-style-type: none"> • All business loans, grants, municipal funding, and financial partnerships should be coordinated through the same point-of-contact
	<ul style="list-style-type: none"> • Technical, legal and financial expertise should be integrated into local organization to retain responsibility, credibility and ownership of decisions and outcomes
	<ul style="list-style-type: none"> • Technical support teams, task forces and committees are viable and important resources
	<ul style="list-style-type: none"> • Close collaboration with State and Federal regulatory officials is critical to timely and flexible interpretation of project requirements
	<ul style="list-style-type: none"> • Academic institution resources are cost effective, able to provide unique technical support, and provide on-the-job training opportunities to students
	Site Identification, Characterization & Prioritization
	<ul style="list-style-type: none"> • Identification and listing of sites as “Brownfields” could be detrimental
	<ul style="list-style-type: none"> • Sites that have existing end-users or potential developers should be prime focus
	<ul style="list-style-type: none"> • Reuse potential should be a prime focus as opposed to contamination problems
	<ul style="list-style-type: none"> • Regional prioritization of sites not feasible where crossing of political jurisdictions is involved – unless respective jurisdictions participate and support the process
	<ul style="list-style-type: none"> • Legislative incentives to entice private property owners to participate – especially non-local owners are needed
	<ul style="list-style-type: none"> • All project information should be centrally available for quick and reliable access
	Risk Management and Remediation
	<ul style="list-style-type: none"> • State legislation that deals with clean-up levels and release from liability is critical
	<ul style="list-style-type: none"> • Deed restrictions and environmental covenants are effective institutional controls at local level
	<ul style="list-style-type: none"> • Community involvement should be managed so the community does not use the vector of potential health risk to force greater demands on owner/potential developer than are economically feasible
	<ul style="list-style-type: none"> • Extended timeframes for Brownfields redevelopment pose greater financial risk to rural communities dependant on short-term grants or limited funding capabilities

	<ul style="list-style-type: none"> • Caution is used to avoid increasing community optimism that the project will create jobs – especially when fewer jobs, different skill level jobs, or long delays in the project may occur
	<ul style="list-style-type: none"> • Environmental liability insurance is an increasingly feasible tool to manage risk
	Legal/Regulatory Issues
	<ul style="list-style-type: none"> • Mechanisms for municipal liability release are needed especially for municipalities forced to assume ownership due to foreclosure, abandonment, or eminent domain
	<ul style="list-style-type: none"> • Less stringent liability and more flexibility is needed for Brownfields which are generally a less serious health threat than Superfund sites
	Site Redevelopment and Marketing
	<ul style="list-style-type: none"> • Development or redevelopment follows certainty in the economic marketplace
	<ul style="list-style-type: none"> • Market demands can pose greater barriers than availability of project funding
	<ul style="list-style-type: none"> • Organized marketing programs in rural communities are not sustainable without long-term grants
	<ul style="list-style-type: none"> • Brownfields properties should not be marketed or advertised as “Brownfields”
	<ul style="list-style-type: none"> • The quality of the community profile is important in giving prospective developers a sense of certainty
	<ul style="list-style-type: none"> • Market studies or focused feasibility analyses are valuable steps in the process
	<ul style="list-style-type: none"> • Building on historical and natural resources develops permanence and continuity of development among generations
	<ul style="list-style-type: none"> • Greenspace or open space is an effective reuse alternative along riparian corridors
	<ul style="list-style-type: none"> • Multi-use commercial and industrial developments are preferred over large, single use facilities due to their adaptability
	Technology Applications
	<ul style="list-style-type: none"> • Community needs to identify and trust proprietary remediation technologies
	<ul style="list-style-type: none"> • GIS technology extremely valuable as central repository for all relevant project information
	<ul style="list-style-type: none"> • Transportation infrastructure needs to be tailored to meet changing land uses and to provide better public amenities
	Funding/Financing
	<ul style="list-style-type: none"> • Best to integrate assessment and clean-up costs into overall redevelopment financing plan
	<ul style="list-style-type: none"> • Lack of certainty in cost of remediation important barrier or risk
	<ul style="list-style-type: none"> • Lending community’s knowledge and participation is needed to help make deals happen

	<ul style="list-style-type: none"> • Cost/benefit models are very complicated and only useful if they are designed for site-specific conditions or situations
	<ul style="list-style-type: none"> • Ultimately, private financing based on market driven economy will sustain process
	<ul style="list-style-type: none"> • Resale value of the property after clean-up is generally less in rural areas than the cost of clean-up and regional market values
	<ul style="list-style-type: none"> • Rural communities need financial assistance with infrastructure installation in order to promote redevelopment of sites
	Environmental Justice
	<ul style="list-style-type: none"> • The biggest problem is lack of understanding about what environmental justice means
	<ul style="list-style-type: none"> • Best way to address environmental justice is to include local residents in the community planning process
	<ul style="list-style-type: none"> • The emphasis should be on addressing the community's overall needs

In addition to the above characteristics related to specific elements of sustainable Brownfields redevelopment, the following general considerations were recorded during the verification interviews:

- The specific manner in which activities are performed in each elemental process should pave the way for the next element.
- Community knowledge of the overall development process is needed to ensure sustainable development.
- One key is to build on those resources that have lasting value.
- At times, the use of professional mediators and formal charrettes can be very effective in establishing clear communications and building credibility and trust among stakeholders.

The data collected through the survey of the eight municipalities and summarized above provides verification that the elements and characteristics of sustainable Brownfields redevelopment presented in Section 4.1 are indeed

reliable and replicable. Also, because each characteristic can be associated with one, or a combination of the three parameters of sustainable development – economic, ecological, and social sustainability, it can be concluded that they are accurate and replicable as well.

5.0 Conclusion

One significant aspect of a Brownfields project is its apparent (but illusory) simplicity. Initially, a Brownfields redevelopment project appears as a straightforward process of reclaiming an abandoned or underutilized property, through the elimination or control of potential contaminants, and putting the land to some new use for the benefit of the community. But, the moment that this process is begun, the Brownfields redevelopment effort becomes connected to an extensive and complex web of ecological, economic and social systems, all of which influence not only what can be done with a specific property, but also how sustainable the outcome will be.

The complexity of a Brownfields redevelopment project is evident in the number of different ways in which the Brownfields process itself has been characterized, both in the literature and by the project participants and government officials who were interviewed for this study. Apart from the problems associated with contamination, the Brownfields redevelopment process has been described as a real estate transaction, a land use issue, a planning issue, a community development issue, and an economic development issue, among others. From the information collected during this first phase of the study, it is evident that a Brownfields redevelopment effort is probably all of these at once, and no one of these in particular.

In addition to addressing concerns for environmental remediation and the restoration of a contaminated property to productive use, a Brownfields redevelopment project is also an integral part of the economic and social revitalization of the larger community. Recognition of the historic antecedents that have lead to the present underutilization and abandonment of potentially valuable properties has led communities to look beyond conventional development

approaches in favor of a broader perspective that recognizes the integration of economic, social and ecological factors - or a sustainable approach.

Sustainability, both of the redevelopment project itself and in terms of its contribution to the larger community, then becomes an important component of the complex Brownfields process. The integration of sustainability with the Brownfields redevelopment process represents a true paradigm shift to the extent that it reflects changes in the manner in which development is planned, the organization of the social mechanisms that control and implement planning, and the role of the community in that planning process.

Correspondingly, the process of redevelopment itself requires new mechanisms and structures for linking issues, goals, interests, and organizations into a combined redevelopment effort. The challenge is to connect the concept of sustainability to activities at the project level in a manner that does not impede the process, but facilitates the integration of social, economic, and ecological parameters in a structured approach that balances the requirements of each.

In addition to a successful outcome, a sustainable Brownfields project also includes two primary dimensions. The first is a concern for potential environmental degradation and the maintenance of a harmonious relationship between the project and the rest of the natural environment. The second is related to the social and economic well being of the community as it relates to the perceived benefits of the project.

In both cases, the domain objective is to maintain the project over the long-term so that it meets the needs of the community without jeopardizing the future goals and vision of the community. Through the course of this analysis some general premises related to the sustainability of a Brownfields project have been developed.

- ❖ Sustainability is a normative concept - it is not based on a set of fixed objective criteria that are inherent to the development process, but will reflect the attitudes and perceptions of the community as a whole.
- ❖ Sustainability refers not so much to the project outcome, but to the manner in which the community responds to its economic and social needs, as well as its ecological issues.
- ❖ Sustainability is often not clearly understood, either as a guiding principle for development or as a final goal; it depends on community outreach, education, and collaboration for its success.
- ❖ Achieving sustainability will require emphasis on new structures and approaches, including changes in the way communities are planned, in order to balance the requirements of the three core parameters.
- ❖ Sustainability is context dependent and very much a grass roots process - what is sustainable in one community may not be so in another.
- ❖ Brownfields sites were not abandoned or underutilized because they are Brownfields sites; they will not be redeveloped solely because the environmental contamination has been addressed.
- ❖ Sustainable Brownfields redevelopment is not solely an environmental consideration, but is also a function of risk and cost.
- ❖ Uncertainty is a key impediment to the development of a Brownfields property -
- the risk can be accommodated if the uncertainty can be defined or mitigated.

- ❖ The important ecological factor impeding the redevelopment of a Brownfields property is not the presence or absence of contamination, but the perception of contamination.
- ❖ The Brownfields process is as much a response to the community's economic and social needs as it is an environmental program.

Within the parameters defined by the ecological, economic, and social systems, a number of specific key elements that can be associated with the sustainability of the Brownfields redevelopment process have been identified. These elements are generic in the sense that they have demonstrated applicability in multiple contexts. Table 5.1 summarizes the elements that have been identified through the course of study.

For each of the identified elements that have been associated with sustainability, a set of basic characteristics have also been developed. These characteristics represent specific criteria or processes that are accessible to the participants in a Brownfields redevelopment and can be manipulated at the project level to influence the degree to which the project is itself sustainable or contributes to the overall sustainable development of the community. A summary of the elements and their associated characteristics is presented in Table 5.2.

Table 5.1: Key Elements Associated with Sustainable Brownfields Redevelopment

Elements	Effect on Sustainable Brownfields Redevelopment
Community Profiling	Sets the foundation for all community decisions and future growth
Comprehensive Community Planning	Involves, integrates, and commits community participants and stakeholders to common vision and goals
Organizational Focus and Structure	Integrates the program into the political and administrative government
Site Identification and Characterization	Reduces the risks that influence remediation, financing, marketing, redevelopment, and regulatory strategies
Risk Management and Restoration	Addresses the fears and misconceptions associated with redevelopment by clarifying uncertainties and balancing benefits with costs
Legal/Regulatory Issues	Prescribes requirements for property transfer and utilization, as well as liability of owners, operators, lenders, buyers, and the municipal government
Site Marketing and Redevelopment	Highlights the importance of balancing economic, social and ecological factors of land use with focus on community needs and future generations
Technology Applications	Increases cost benefits and quality of life as new technologies are identified, developed and integrated
Project Funding and Finance	Provides the fiscal basis to initiate programs/projects and ensure their continued operation until market forces take over
Environmental Justice	Ensures environmental equity, equitable costs and equitable benefits for the community and stakeholders

Table 5.2: Characteristics Associated with Elements of Sustainable Brownfields Redevelopment

Elements	Characteristics
Community Profiling	<ul style="list-style-type: none"> • Develop environmental baseline inventory for future ecosystem management • Estimate natural resource consumption limits • Incorporate important landscape and attractive community features • Associate ecological assets with community values • Define the composition and character of the community • Understand the socio-cultural influences and needs that promote stability • Preserve natural, cultural, and historic resources for inter-generational continuity • Develop a sense of community self-reliance • Determine the economic basis of the community and climate for investment • Recognize the skills and knowledge of the community labor force
Comprehensive Community Planning	<ul style="list-style-type: none"> • Develop private-public partnership • Incorporate community concerns into the decision-making processes • Integrate the regional ecosystem(s) perspective • Include “Best Practices” for sustainability <ul style="list-style-type: none"> ✓ Develop a comprehensive approach to all concerns ✓ Identify the carrying capacity of the ecosystem ✓ Establish urban growth boundaries ✓ Determine current and planned surrounding land use ✓ Promote the potential benefits for minimizing automobile use ✓ Determine economic self-sufficiency ✓ Depend on community-stakeholders’ consensus ✓ Identify uncertainties and build-in flexibility in planning options ✓ Equalize benefits and burdens for the community and stakeholders
Organizational Focus and Structure	<ul style="list-style-type: none"> • Emphasize need for strong community and public leadership • Include all project stakeholders and concerned or interested citizens • Centralize local government coordination, point-of-contact, and authority • Integrate all public and private resources
Site Identification and Characterization	<ul style="list-style-type: none"> • Determine which party is best to initiate and perform the site characterization • Obtain accurate ecological information <ul style="list-style-type: none"> ✓ Delineation of site characteristics ✓ Representation of nature of contamination ✓ Site assessments ✓ Integration of assessments, audits and inspections ✓ Identification of groundwater contamination ✓ Create continuous updating procedure ✓ Use of technical resources available • Assess the redevelopment potential of the site <ul style="list-style-type: none"> ✓ Adjacent land owners and uses ✓ Cooperation of the owner ✓ Cost of remediation ✓ Socioeconomic conditions of the community ✓ Transportation and infrastructure ✓ Attractive natural or historic features ✓ Current economic conditions • Illustrate the basis of prioritizing the site over other candidate sites <ul style="list-style-type: none"> ✓ Site prioritization schemes ✓ Multi-level screening process/prioritization model

Characteristics Associated with Elements of Sustainable Brownfields Redevelopment (Continued)

Elements	Characteristics
Risk Management and Restoration	<ul style="list-style-type: none"> • Identify and clarify the barriers to effective risk management <ul style="list-style-type: none"> ✓ Lack of communication and coordination with stake holders ✓ Reluctant or hesitant stakeholders ✓ Community priorities and objectives ✓ Incomplete or inaccurate site characterization ✓ Threat of contamination spread ✓ Long-term remedial approaches ✓ Government policy and requirement changes ✓ Loss of market opportunity window ✓ Contingent risks of owners/developers • Address the community concerns <ul style="list-style-type: none"> ✓ Relate scientific results and risks to community understanding ✓ Inform the public of issues critical to their interests ✓ Empower the public to act with respect to the risk communicated • Address the project participant concerns <ul style="list-style-type: none"> ✓ Reluctance to participate and liability indemnification for current owner ✓ Return on investment and risk factors/perception for buyer & developer ✓ Borrower circumstances and property value maintenance for lender • Identify the tools for Risk Management <ul style="list-style-type: none"> ✓ Project organizing ✓ Federal and State agency roles ✓ Use risk based corrective actions based on future uses ✓ Identify property ownership alternatives ✓ Apply institutional controls and insurance
Legal/Regulatory Issues	<ul style="list-style-type: none"> • CERCLA <ul style="list-style-type: none"> ✓ “Joint and Several Liability” ✓ SARA, 1986 ✓ EPA Guidance, 1992 “Covenant not to Sue” “Prospective Purchase Agreements” ✓ CERCLA Amendment, 1996 “Comfort Letter Policy” “Secured Lenders and Fiduciaries” protections • RCRA, Clean Air Act, Clean Water Act, Toxic Substances Control Act, etc.
Site Marketing and Redevelopment	<ul style="list-style-type: none"> • Promote program factors <ul style="list-style-type: none"> ✓ Community expectations ✓ Rationality and incentives ✓ Ownership ✓ Program life cycle ✓ Control of development • Promote ecological factors <ul style="list-style-type: none"> ✓ Eco-Industrial parks ✓ Reclaimed Brownfields for parks and open spaces ✓ Green space and open space as interim use ✓ Reclaimed Brownfields in ecologically sensitive areas ✓ Landscape design considerations • Promote socioeconomic factors <ul style="list-style-type: none"> ✓ The right property ✓ The right use ✓ The right incentives • Site Marketing <ul style="list-style-type: none"> ✓ Sites as community assets ✓ Role of prevailing market forces ✓ Market or feasibility analyses

Characteristics Associated with Elements of Sustainable Brownfields Redevelopment (Continued)

Elements	Characteristics
Technology Applications	<ul style="list-style-type: none"> • Energy Technology <ul style="list-style-type: none"> ✓ Reducing energy demands ✓ Renewable energy • Environmental Technology <ul style="list-style-type: none"> ✓ Industrial Ecology ✓ Eco-Industrial parks ✓ Pollution prevention and waste minimization ✓ Site assessments and remediation ✓ Ecological monitoring and assessment • Transportation Technology <ul style="list-style-type: none"> ✓ Intelligent Transportation Systems (ITS) ✓ Alternative fuels and vehicles • Telecom/Information Technology <ul style="list-style-type: none"> ✓ Geographic Information System (GIS) • Public Safety Technology
Project Funding/Finance	<ul style="list-style-type: none"> • Redevelopment processes requiring funding <ul style="list-style-type: none"> ✓ Site characterization and remediation ✓ Planning, public outreach and design approval ✓ Development and reconstruction ✓ Long term operational support • Public Sources of funds, primarily for the initial stages of the project <ul style="list-style-type: none"> ✓ Federal – EPA, HUD, DOT, DOC, SBA ✓ State – environmental or economic agencies, tax programs, loans ✓ Local – incentive programs, tax increment financing programs, grants • Private Sources of funds <ul style="list-style-type: none"> ✓ Property owners or other responsible parties ✓ Prospective purchasers or developers ✓ Equity investors ✓ Commercial banks ✓ Private foundations and universities
Environmental Justice	<ul style="list-style-type: none"> • Early, adequate and meaningful community involvement in decision making • Stakeholders who are committed to effecting a change for the better • Equal access to all information relating to the redevelopment • Willingness to negotiate to achieve a win-win situation • Environmental equity, equitable costs and equitable benefits for all

Despite the inherent complexity of the Brownfields redevelopment process and the multiple systems and processes that come together to influence the sustainability of the process, there is one overarching concept that is most frequently cited with respect to ensuring the sustainability of a Brownfields redevelopment project. What is ultimately sustainable is what makes sense for the community.

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Appendix A - List of Acronyms

A List of Standard Acronyms Used in This Document

ASTM	American Society for Testing and Materials
BERI	Brownfields Economic Development Initiative
BRAC	Base Realignment and Closure
CAP	Corrective Action Plan
CDBG	Community Development Block Grant
CDC	Community Development Corporation
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act (Superfund)
CERCLIS	Comprehensive Environmental Response, Compensation & Liability Information System
CESD	Center of Excellence for Sustainable Development
CPC	Cuyahoga County Planning Commission
CRA	Community Reinvestment Act
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOJ	U.S. Department of Justice
EC	Enterprise Community
EDZ	Economic Development Zone
EJ	Environmental Justice
EPA	U.S. Environmental Protection Agency
ESA	Ecological Society of America
EO	Executive Order
EZ	Enterprise Zone
EZ/EC	Empowerment Zone/Enterprise Community
FUSRAP	Formerly Utilized Sites Remedial Action Program
GAO	U.S. General Accounting Office
GC/MS	Gas Chromatography/Mass Spectrometry
GIS	Geographic Information System
GPS	Global Positioning Satellite
HUD	U.S. Department of Housing and Urban Development
ICMA	International City/County Management Association
IDA	Industrial Development Authority
IDB	Industrial Development Bond
IEMTF	Interagency Ecosystem Management Task Force
IRM	Institute for Responsible Management
ISTEA	Intermodal Surface Transportation Efficiency Act
ITI	Intelligent Transportation Infrastructure
ITS	Intelligent Transportation System
LAC	Local Action Committee

APPENDIX A
ACRONYMS

LCLT	Lopez Community Land Trust
LNYSW	“Live Near Your Work” Program
LUSTs	Leaking Underground Storage Tanks
MOU	Memorandum of Understanding
NEJAC	National Environmental Justice Advisory Council
NIMBY	“Not in My Backyard”
NPS	National Park Service
NYSEDZ	New York State’s Economic Development Zone
OEAA	Office of Environmental Affairs (U.S.E.P.A.)
OSWER	Office of Solid Waste and Emergency Response (U.S.E.P.A.)
PCB	Polychlorinated Biphenyl’s
PECs	Parameters, Elements, and Characteristics
PPA	Prospective Purchase Agreement
RBCA	Risk-Based Corrective Action
RBDM	Risk-Based Decision Making
RCED	Rural Economic and Community Development
RCRA	Resource Conservation and Recovery Act
RFP	Request for Proposal
RIDEM	Rhode Island Department of Environmental Management
SARA	Superfund Amendments and Reauthorization Act of 1986
SEP	Supplemental Environmental Project
STIP	Sustainable Technologies Industrial Park
SUNY	State University of New York
TDR	Transfer of Development Rights
TQM	Total Quality Management
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage and Disposal
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UVA	University of Virginia
VCP	Voluntary Cleanup Program
WCMC	West Central Municipal Conference

Appendix B – Glossary

ASTM	The American Society for Testing and Materials. An organization that establishes standards for industrial and other services, including methods of testing and sampling of hazardous waste and contaminated media.
Brownfields	Brownfields sites are abandoned, idled, or underutilized industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination.
Brownfields Program	The U.S. Environmental Protection Agency's Brownfields Economic Redevelopment Initiative is organized to help communities revitalize Brownfields properties (both environmentally and economically), mitigate potential health risks, and restore economic vitality to areas where Brownfields exist. It is designed to empower States, communities, and other stakeholders in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and sustainably reuse Brownfields. Efforts under the Brownfields Initiative are grouped into four broad and overlapping categories: 1) Providing grants for Brownfields pilot projects; 2) Clarifying liability and cleanup issues; 3) Building partnerships and outreach among federal agencies, states, tribes, municipalities, and communities; and 4) Fostering local job development and training initiatives.
Brownfields Pilot	The Brownfields pilots are designed to support creative explorations and demonstrations of Brownfields solutions. The Pilots, each funded at up to \$200,000 over two years, test redevelopment models; direct special efforts toward removing regulatory barriers without sacrificing protectiveness; and facilitate coordinated site assessment, environmental cleanup and redevelopment efforts at the federal, state, and local levels. These grants are used to generate interest by bringing together community groups, investors, lenders, developers, and other affected parties to address the issues of cleaning up sites contaminated with hazardous substances and returning them to appropriate, productive use. The pilots are intended to provide EPA, States, Tribes, municipalities, and communities with useful information and strategies as they continue to seek new methods to promote a unified approach to site assessment, environmental cleanup, and redevelopment.
Brownfields Site	A Brownfields site is a property, or portion thereof, that has actual or perceived contamination and an active potential for redevelopment or reuse.
CERCLA	The Comprehensive Environmental Response, Compensation, and Liability Act authorizes the federal government to create a special trust fund (the Superfund) to be used for the assessment and cleanup of spills and other releases of hazardous substances, as well as abandoned or uncontrolled hazardous waste sites. It establishes the requirements and procedures for the cleanup of sites that have been contaminated by releases of hazardous substances, and requires that a deed for federally owned property being transferred outside the government contain a covenant that all remedial action necessary to protect human health and the environment has been taken, and that the U.S. shall conduct any additional remedial action necessary after transfer.

CERCLIS	The Comprehensive Environmental Response, Compensation, and Liability Information System is a database that serves as the official federal inventory of CERCLA hazardous waste sites, and includes information about the sites, planned and actual site activity, and financial information.
Ecosystem	Described in its simplest terms, an ecosystem is an interconnected community of living things (including humans), and the physical environment (non-living substances) within which they interact.
EZ/EC	Empowerment Zone/Enterprise Community. A geographic area that has been targeted to receive special federal treatment and incentives in an effort to spur private investment and job creation. The program is a Presidential initiative designed to afford communities real opportunities for growth and revitalization through economic opportunity, sustainable community development, community-based partnerships, and a strategic vision for change. Designated communities receive technical assistance, grants, employer tax credits, tax-free facility bonds, tax deductions, and increased coordination with federal programs. The urban portion of the program is administered through HUD; the rural portion through USDA Rural Development.
Enterprise Zone	A targeted area that has been designated as blighted or economically depressed by a governmental entity in an effort to stimulate economic activity through tax reduction, changes in zoning restrictions, and other governmental regulations on private enterprise. Implemented through state legislation, these economic incentives for investment and/or job creation are expected to stimulate market forces to respond in the designated areas.
Environmental Justice	Established by Executive Order No. 12898, environmental justice asserts the fair treatment of people in the development of environmental laws, regulations, and policies; irrespective of race, culture or socioeconomic status.
Fringe	The contiguous area on the periphery of existing development and infrastructure that is connected to the urban core.
Hazardous Substance	As defined under CERCLA, any chemical or radiological material that poses a threat to public health or the environment; also any such wastes as defined under RCRA. Examples include materials that are toxic, corrosive, ignitable, explosive, or chemically reactive.
Human-made Capital	All of the tools, machines, equipment, technologies, structures, factories, and infrastructure that are the output product of economic production, or are consumed in the process of economic production.
Industrial Ecology	The study of engineering principles and processes based on the concept that society must balance its accounts of materials and energy with the ultimate goal of minimizing harmful wastes and reusing, to the greatest extent possible, both the wastes and the industrial products themselves.
Institutional Controls	A legal or institutional measure that subjects a property owner (or tenant) to limitations on access or activity at a particular site in order to protect human health or the environment. Institutional controls normally allow a contaminated property to be returned to use more quickly.
Infill Redevelopment	Construction of new projects on undeveloped parcels of land that are interspersed among existing, developed parcels with supporting infrastructure in place; or reintroducing development and adaptive reuse to a previously developed, abandoned, demolished, or vacated site with supporting infrastructure in place.

Leakage	That portion of income to a community that is not spent or reinvested locally, but leaves the area as payment for imported goods and services, outside investment, or as tax payments to government.
Natural Capital	The natural environment and its living systems, defined in terms of a stock of environmentally provided assets (soil, atmosphere, forests, minerals, water, fauna, wetlands), that provide the useful materials that represent the raw input or consumable products of human production.
PECs	The parameters, elements and characteristics of sustainable development, defined so that parameters represent the three major systems of social structure; economic, social, and ecological. Within these three parameters, specific elements are defined in terms of their association with sustainable development and the associated characteristics of those elements are documented.
Phase I Audit	A Phase I Environmental Audit is an initial environmental investigation that is limited to a historical records search to determine ownership of a site and to identify the kinds of chemical processes that were carried out at the site. A Phase I audit may include a site visit, but does not involve any environmental sampling.
Phase II Audit	A Phase II Environmental Audit is an investigation that includes tests performed at the site in order to confirm the location and identity of environmental hazards and recommend cleanup alternatives.
Phase III Audit	A Phase III Environmental Audit includes the comprehensive characterization, evaluation, and removal of contaminated materials from a site, and their legal disposal.
PRP	A potentially responsible party is any individual, or organizational entity (e.g. owners, operators, transporters, managers, or generators of hazardous wastes) that is potentially responsible for, or contributing to, the contamination problems at a CERCLA (Superfund) site.
Public Capital	Funds that are spent by government entities for products, facilities, or services that are designated for the benefit of the public.
RBCA	Risk-Based Corrective Action is a streamlined approach, defined by the ASTM, in which exposure and risk assessment practices are integrated with traditional components of the corrective action process to ensure that appropriate and cost-effective remedies are selected, and that limited resources are properly allocated.
RCRA	The Resource Conservation and Recovery Act (1976) establishes the federal regulatory program to track solid and hazardous waste management from generation to disposal. The Act defines solid and hazardous waste, authorizes EPA to set standards for facilities that generate or manage hazardous waste, and establishes a permit program for hazardous waste treatment, storage, and disposal facilities.
Removal Action	A removal action is usually a short-term effort designed to stabilize or cleanup a hazardous waste site that poses an immediate threat to human health, or the environment.
Revolving Loan Fund	A loan program, usually sponsored by a government entity, in which a specific amount of public funds is set aside to make loans for delineated purposes. As the loans are repaid, the funding pool is reallocated and loaned out again.

Risk Assessment	The process of identifying and documenting actual and perceived risks to human health or the environment, to allow further evaluation and appropriate responses.
Risk Communication	The exchange of information about human health or environmental risks among public and private individuals to accurately inform and promote mutual understanding.
Rural	Areas of land constituting various land uses at a low density which are suitable for sparse settlement, farms; or areas with little or no public services not suitable, necessary, or intended for urban use; separated from other jurisdictions by farms, forest, or open space; and usually dependent on agriculture or some other singular industry. Defined by population, the US Census Bureau considers rural to be all territory, population, and housing units in places of less than 2,500 including outside incorporated areas and census designated places, and the rural portions of extended cities.
Site Assessment	The process of determining whether there is contamination present at a site, the source and extent of that contamination, and the potential pathways of exposure to the public and the environment.
Social Capital	People, their capacity levels, institutions, cultural cohesion, education, information, skills, and knowledge.
Suburban	Areas adjacent to the urban core with various land uses at various densities having exclusionary zoning that implements a separation of uses, and with a focus on residential spacing.
Sustainability	The ongoing process of achieving development or redevelopment that does not undermine its physical or social systems of support.
Sustainable Development	A process of change in which the resources consumed (both social and ecological) are not depleted to the extent that they cannot be replicated. The concept also emphasizes that the creation of wealth within the community considers the well-being of both the human and natural environments, and is focused on the more complex processes of development rather than on simple growth or accumulation.
Sustainable Brownfields	A project defined as one in which redevelopment and growth are maintained over the long-term and occur within the limits of the environment so that the current needs of the citizens are met without compromising the ability of future generations to meet their needs.
Tax Increment Financing	A method of financing infrastructure and other public costs of preparing and providing useable lands for development or redevelopment by enabling a city to specifically allocate the property tax revenue generated from a new development to the debt incurred as a part of the initial improvements required for that development. The taxable value on the developable land is frozen before development occurs. Upon the completion of development, the ensuing increased tax revenues realized as a result of an increase in taxable valuation above the frozen value is reallocated to pay for the improvements to the property. The developer still pays all taxes due on the increased value. The amount up to the frozen valuation is distributed to all governmental taxing jurisdictions (city, county, school district, public utility, etc.). However, the increased increment above the frozen value is reallocated away from the various taxing jurisdictions and governmental purposes and applied to the initial project improvement costs. Once these debts are recovered, the full taxable valuation is again distributed among the various taxing jurisdictions.

Urban	Areas of large land mass and population nucleus constituting various land uses at high density with supporting infrastructure and public services, and a high degree of economic and social integration. Defined by population, the US Census Bureau considers urban to be all territory, population, and housing units in urbanized areas and in places of 2,500 or more persons outside urbanized areas.
Urban Sprawl	The decentralization of the urban core through the unlimited outward extension of dispersed development beyond the urban fringe where low density residential and commercial development exacerbates fragmentation of powers over land use; also, the consumption of resources and land in excess of what is necessary where development is costly and underutilizes existing infrastructure.
Voluntary Cleanup	A formal means established by many States to facilitate assessment, cleanup, and Program (VCP) redevelopment of Brownfields Sites. Under VCP, owners or developers of a site are encouraged to approach the State voluntarily to work out a process by which the site can be readied for redevelopment.
Zoning	<p>The local governmental control over land use by stipulating what can be constructed in certain areas and how structures may be used. A community is classified by various zones, with differing land use controls imposed on each zone, specifying the allowable uses of land and buildings, the intensity or density of such uses, and the size and placement restrictions of buildings.</p> <ul style="list-style-type: none">– Disclusionary Zoning - The separation of uses by strict delineation of what can be included in certain zoning classifications and buffering the different uses and their intensities.– Inclusionary Zoning - The prerequisite of including low- to moderate-income households in a development that exceeds a certain specified number of housing units.

APPENDIX B
GLOSSARY

Appendix C - Brownfields Pilot Project Case Analysis

Pilot Project: Boston, MA

<u>Key Elements</u>	<u>Characteristics Identified and How They Contribute to Sustainability</u>
Project Scope, Scale & Goals	The Dudley street neighborhood (DSN) is the focus of the redevelopment effort for the Boston Pilot. The DSN is located in the heart of Roxbury and North Dorchester, and is known to contain some 1300 vacant (and potentially contaminated) lots. For this Pilot, six properties have been targeted, one of which is listed as an alternate.
Community Profile	Boston is one of the major industrial centers in New England, and is a major Atlantic seaport. Population in the metropolitan area is 575,000. The DSN is a tri-lingual community (e.g. English, Spanish and Cape Verdean). This DSN is the principal business center for Boston's African-American community. Not only does this area suffer from greater unemployment than other areas in Boston, but it also contains a disproportionately higher percentage of the state's contaminated sites.
Program/Project Organization	EPA Region I selected the city of Boston for a Regional Brownfields Pilot. The city's Brownfields Partnership Taskforce is providing funding to the Brownfields Economic Redevelopment Initiative (BERI). BERI is focused on the DSN (a member of the BERI group) as the target of Brownfields Pilot Project redevelopment activities. Another member of the BERI group is the University of Massachusetts; this institution is also involved with Pilot activities. Tufts University has also been involved in the some of the outreach efforts associated with the Pilot.
Site ID and Characterization	The Modern Electroplating site is a 2-story building with 55,000 square-feet of floor area The Freedom Electronics site contains an 87,000 square-foot building. The site has a leaking underground storage tank and illegal landfill materials have been disposed onsite. The Hampden Street site has a total of 148,000 square-feet. The owner has not responded to letters about access to the site. The Simon's Lot site has a total area of 293,000 square-feet. Three of the four owners of the property are tax-delinquent. The Clifton Street Bakery property has a total of 26,707 square-feet. Attempts to obtain cooperation of the owner have not been completely successful; however, the owner has some interest in selling. A developer has shown strong interest in redeveloping the property. The site is large and has strong community support for its redevelopment.
Risk Management & Cleanup	The EPA has already spent over \$1 million at one of the sites (Modern Electroplating) to conduct a removal action. A site assessment is necessary to estimate remaining costs of cleanup. Phase I and Phase II assessments have been either completed or are in progress at two of the sites. Less than cooperative site owners are complicating the process of obtaining additional information about the actual hazards posed by the sites.
Community Planning	The Pilot, in conjunction with some of the other members of BERI, has conducted community outreach meetings to educate the community about Brownfields, and to obtain feedback regarding acceptable development strategies at the target sites.

Site Marketing	Interested developers have been identified for some of the sites. Qualitative assessments have been made about the marketability of some of the sites based on location, presence of loading docks, availability of transportation, condition of existing structures on the properties, amount of available land associated with the site, and proximity to waterfront areas and wetlands.
Redevelopment Approaches	The Modern Electroplating site was selected as the "anchor" site to serve as a model for other targeted sites. It is in a prime business location. The city has moved to foreclose on the site due to back taxes. Potential redevelopers have expressed interest in the property. It is located in an Enhanced Enterprise Zone, which makes it eligible for additional funding sources and tax incentives. The Freedom Electronics site is owned by the city of Boston. It is also well located in terms of business and transportation, and it is also eligible for an assortment of incentives including redevelopment/remediation financing, tax credits for hiring community residents, and investment tax credits for choosing manufacturing as the end activity at the site.
Technology Applications	The Pilot has collected and stored information in a GIS for five sites. Stored information includes economic assets, transportation, contamination levels, and zoning.
Project Financing	A proposal has been submitted to the EPA for the Brownfields Revolving Loan Fund. The fact that five of the properties are located in areas designated as either a Federal Empowerment Zone (EZ) and/or a State Enhanced Enterprise Community (EEC) carries a variety of financial advantages. EZ sites are eligible for additional sources of funding that can be used for revitalization efforts. The EZ provides a \$2,500 tax credit for each resident of the zone hired (a Workers Tax Credit). Reduced loan financing rates are also offered to eligible large-scale redevelopment projects. Similar funding options and tax incentives are available for sites located in EEC areas. If the end use chosen for the property is manufacturing, the State offers a 5% investment tax credit. The Freedom Electronics site has been designated as an Overall Economic Development Project (OEDP) by the Metropolitan Area Planning Council. This designation makes it eligible for a \$750,000 Public Works Grant that can be used for site development, remediation, demolition, construction, land filling or other activities necessary for redevelopment.
Legal/Regulatory Initiatives	The Pilot program provided information to the State Brownfields committee, which in turn drafted Brownfields legislation for the city of Boston.
Community Involvement	The DSN has an existing community group that is active in providing input to the redevelopment of this inner city Boston neighborhood. Other organizations within the greater community are also involved with the operation of the BERI. The DSN and other community groups such as the Nuestra Comunidad, the Environmental Diversity Forum, and the Alternatives for Community and the Environment are all collaborating with city personnel officials to identify known sources of pollution.
Environmental Justice	One of the reasons for the targeting the DSN for this Pilot is to address some of the disproportionately higher exposures that minority and/or disadvantaged communities have to contaminated sites. The existing community groups that are working with BERI provide a forum for the inclusion of minority participation with the redevelopment process.

Pilot Project: Bridgeport, CT

<u>Key Elements</u>	<u>Characteristics Identified and How They Contribute to Sustainability</u>
Project Scope, Scale & Goals	The Pilot objective is to return contaminated inner city, derelict land to productive use and create a prototype for other cities. The expectation is that the project will lead to new jobs, local economic growth, and increased tax base and property values. The project is in two phases; the first is to hire a consultant to collect background data on potential sites, the second is to select six sites to serve as model redevelopment sites. All tasks under the original Pilot Work Plan have been completed – this is a successful Pilot on this basis.
Community Profile	Bridgeport, with a population of 132,919, is the largest and most distressed city in the State. The citywide unemployment rate is 8.6%. Manufacturing jobs have decreased 50% in the last decade. The area poverty rate is 17%. Significant suburban greenfields development has occurred leaving several hundred acres of prime inner-city industrial real estate abandoned.
Program/Project Organization	The Office of Planning and Economic Development provides the overall management and has convened a task force (the Community Linkage for Environmental Action Now) to act as an oversight and advisory committee. Project oversight and assistance comes from EPA Region 1.
Site ID and Characterization	A site inventory of 205 sites has been ranked according to a database prioritization model. Six sites have been targeted for concentrated attention, with one site, the 9.8 acre former Jenkins Valve property, as the first site to be addressed. This property is to be used for an indoor ice-rink, ballpark, and a new museum.
Risk Management & Cleanup	Using an outside consultant, the project will collect information on the tax status, land use, land area, demolition requirements, existing infrastructure, crime, redevelopment potential, and need for remediation for the inventory of potential sites. These sites have been ranked for development potential and six candidate sites have been identified for highest and best use studies.
Community Planning	Planning includes "Team Bridgeport," a group appointed by the Governor to develop a State Action Plan for the redevelopment of the City.
Site Marketing	Approximately 12 companies have expressed interest in sites the city has identified as having economic development potential. The city is maintaining ongoing communication with these companies. The American Institute of Architects used one site (a former power plant) as the focus for an environmental design charrette to emphasize the need for a comprehensive view of the interconnection between economic need, community development, and long-term environmental stability.
Redevelopment Approaches	Estimates are that approximately 200 jobs have been created, but no facility is as yet operational so there is no increase in property tax base. The Pilot has addressed approximately 60,000 square feet of facilities for redevelopment. But early project reports of accomplishment may have been overstated. One 10-acre site has been cleaned and is ready for redevelopment.
Technology Applications	Data not available.

APPENDIX C
SUMMARY OF PILOT PROJECTS ANALYZED

Project Financing	The State has pledged \$2 mm to support site purchases and land assembly. The Grow Bridgeport Program combines multiple sources of public funds into a \$7mm grant for small business financing. An additional \$3 mm in Federal Enterprise Community Funds supports a ten -year development plan. A Cooperative Agreement with EPA exists for a revolving loan fund. The project has also received \$15mm in private funding.
Legal/Regulatory Initiatives	The city expresses concern that statutory constraints on the use of loan fund money (cannot be used for petroleum-related releases, lead/asbestos abatement, and most demolition activities) would discourage businesses from seeking loans. The solution is to try to minimize the effect by consolidating the Brownfields funds with the existing Grow Bridgeport Fund.
Community Involvement	The city is involving the local community in the Brownfields decision making process. The CLEAN group has been organized to include individuals representing the local community, business, and government. This group has been directly involved in the evolution of the program and has grown in size.
Environmental Justice	Data not available

Pilot Project: Buffalo, NY

<u>Key Elements</u>	<u>Characteristics Identified and How They Contribute to Sustainability</u>
Project Scope, Scale & Goals	The project focuses on developing a city-wide master list of potential Brownfields properties, prioritizing and assessing 10-20 sites from a preliminary inventory of 100, creating a GIS database of site information, preparing a Brownfields Redevelopment Manual, Community Outreach Plan, Developer Workshop/Showcase, and a South Buffalo Redevelopment Plan.
Community Profile	Buffalo is a typical northeastern urban area with population of 328,000; HUD ranked as the 4th most distressed in U.S., with a poverty of about 25%. The city contains about 98% of the surrounding county's minority population; is a HUD EC and includes several NYS EDZs. Historical development was primarily for industrial manufacturing and as a rail/waterway transportation hub for US/Canada/Great Lakes commerce. Long history dealing with hazardous waste issues (30 sites on NYS List, 60 sites on CERCLIS), several Brownfields sites are located along water bodies.
Program/Project Organization	The Pilot is led by a Buffalo Brownfields Task Force including city, county, state, private industry, universities, and general public citizens. The task force is chartered by the Mayor.
Site ID and Characterization	As of January 1998, the 100 sites identified for inventory, representing about 4,000 acres, were screened to 25, with 22 listed as potential Pilot demonstration projects. Eleven sites have Phase I assessments underway or completed by the Task Force.
Risk Management & Cleanup	No data available.
Community Planning	The City Planning Dept. is creating comprehensive development plans focusing on various sectors/wards of the City (ex. South Buffalo Redevelopment Plan) to integrate new business development with recreational/greenspace areas.
Site Marketing	A partnership exists between the city and the local electric power utility to conduct a Brownfields Redevelopment Workshop & Developer Showcase to highlight progress made, discuss and promote sites identified with developers, present factual evidence on specific sites to lessen false perceptions, address developers concerns and barriers, consider regional development needs, strengths and strategies. Results will be compiled into a Redevelopment Manual to sustain future developer outreach efforts.
Redevelopment Approaches	Redevelopment strategies and approaches tailored to specific qualities and location of individual sites are consistent with comprehensive area plans. Unique "First Source Agreement" requires businesses receiving city assistance to give first hiring consideration to local residents. On larger properties the plan is to seek mixed use with focus on recreation/greenspace/light industrial/commercial. Emphasis is on creating jobs for local residents.
Technology Applications	The Pilot is developing a GIS database of Citywide Brownfields sites and their qualities; creating a high-tech business incubator in a former auto parts plant; and transforming a former steel mill along Lake Erie into a 22-acre hydroponic tomato greenhouse; and using petroleum waste from a site for repaving asphalt.

APPENDIX C
SUMMARY OF PILOT PROJECTS ANALYZED

Project Financing	The project leveraged a variety of Federal HUD EC & NYS EDZ grants, donations from local Development Corporations, and private company investments. Tomato Greenhouse project is underway to obtain utility rate discounts and wage tax credits (\$750-\$1500 credit per year for each new full-time employment position created). Phase I/II assessments through NYS Environmental Assessment Bond Fund, site evaluation and highway improvements through NYS Transportation Bond Act.
Legal/Regulatory Initiatives	No data available.
Community Involvement	Project prepared a Community Outreach Plan to inform the public of the city's Brownfields community participation process.
Environmental Justice	Buffalo Environmental Management Commission used to educate, sensitize, involve, and empower minority & low-income community regarding Brownfields. City has agreements with new manufacturing plant, greenhouse, and other private redevelopments to maximize hiring of women and minority subcontractors. Majority of the largest Brownfields redevelopments occurring in area's minority/disadvantaged neighborhoods.

Pilot Project: Burlington, VT

<u>Key Elements</u>	<u>Characteristics Identified and How They Contribute to Sustainability</u>
Project Scope, Scale & Goals	The Pilot targets 17 properties consisting of 40 acres of land within a 3-mile radius of Burlington's central business district. The Pilot's goal is an integrated approach that incorporates ecological zoning strategies, pollution prevention, and sustainable development. Objectives include developing a comprehensive Brownfields Plan, achieving a high degree of citizen participation & support, and creating a redevelopment model for other small cities. One Brownfields site is within a 430-acre agri/industrial park situated on a 830-acre land tract that includes the world's largest wood chip electrical generating plant, leaf compost facility, wood/metal recycling depot, and community-supported agriculture.
Community Profile	With a population of 39,127 Burlington is among the poorest cities in Vermont (about 19% below poverty) and has received a Federal Urban Enterprise Community (EC) designation. Over 50% of the population are between 20-49 years old. Its Brownfields pose an obstacle to growth and land use within the city, causing unwanted urban sprawl and relocation. The largest Brownfield site is preventing highway construction to connect the city-center with the Lake Champlain waterfront. Nine of the Pilot sites are located within the EC, and most of the sites are in or near disadvantaged neighborhoods.
Program/Project Organization	The Project Coordinator works for the city's Community and Economic Development Office; in coordination with an advisory committee task force, and with contracted firms to help identify marketable properties, strategies and potential purchasers.
Site ID and Characterization	No data available.
Risk Management & Cleanup	The city is seeking ways to address community concern over particulates created by the scrap wood-fired power plant through air monitoring and the charrette process. The city is addressing private developer fears over liability by using various municipal instruments to acquire Brownfields sites, clean them up, sell or lease them back to private developers, thereby retaining the environmental liability.
Community Planning	The city has established a "Coordinating Committee" for a pre-Pilot Brownfield project in 1992 that continues to advise the City. The committee consists of community members, local businesses, environmental groups, and government regulators. A similar approach to developing community advisory groups is to be used for other sites. A comprehensive Brownfields Plan is being developed to integrate Pilot Project goals/objectives.
Site Marketing	No data available.
Redevelopment Approaches	The city is taking an integrated approach that incorporates ecological zoning strategies, pollution prevention, and sustainable development to encourage environmentally friendly economic growth. The emphasis is on creating a transportation corridor between the city core and waterfront, cleaning-up and redeveloping the waterfront, and creating an eco-industrial park at the largest urban site. An "Urban Reserve" is being created along the waterfront through zoning restrictions on oil/gas tanks.

APPENDIX C
SUMMARY OF PILOT PROJECTS ANALYZED

Technology Applications	A DOE grant is being pursued to implement a prototype of high-strength waste-to-product technology such as fish food and fertilizer production; also researching bioshelter design and construction and value-added food production.
Project Financing	In addressing its project coordination, community involvement, site assessment, and remediation issues the city has used general city revenues while leveraging EPA Pilot Project grant, State Housing & Conservation Trust, EC, and Lake Champlain Basin funds, CDBG, tax credits, and private developer money. Obtaining legal assistance from the City Attorney and community banks' in-house counsel, and technical assistance from local university and non-profit economic planning and development groups.
Legal/Regulatory Initiatives	No data available.
Community Involvement	The city relies heavily on community advisory groups (ex. Barge Canal Coordinating Committee), local business associations, and local neighborhood planning assemblies to maintain public awareness of issues and to identify alternatives.
Environmental Justice	The city plans to involve disadvantaged neighborhood citizens in all stages of the planning process; allow community to assess the level of risk they are willing to live with at sites; and have community determine future land use options.

Pilot Project: Cape Charles, VA

Key Elements

Characteristics Identified and How They Contribute to Sustainability

Project Scope, Scale & Goals

The land set aside for the STIP covers 570 acres, and includes wetlands, a coastal dune habitat, and industrially zoned areas. The Pilot targets 155 acres of this property that contains a former dump, a railyard site and the remains of abandoned industrial operations. The target area is situated on a narrow strip of land between the Chesapeake Bay and the Atlantic Ocean. The goal of the Pilot is to assess the extent of contamination at the site, and to design a remediation strategy that will allow for redevelopment of the park. After redevelopment the property will contain the eco-industrial park, restored wetlands, a nature trail, an environmental education facility, and a tertiary sewage treatment system.

Community Profile

The Town of Cape Charles is located on the southern tip of Virginia's Eastern Shore on a narrow strip of land between the Chesapeake Bay and the Atlantic Ocean. The area boasts rich farmland, productive waters, vast wetlands, and miles of unspoiled coastline. The population of the area is 13,000; 27% of which live below the poverty level. Forty-seven percent of the population is African-American.

Program/Project Organization

The focus of the Pilot is the development of the Cape Charles Sustainable Technologies Industrial Park (STIP). Solar Building Systems is designed as the first tenant at this site. The STIP is designed to demonstrate advanced facilities in resource efficiency and pollution prevention. Because of the possibility that there may be hazardous substances at the site, an assessment must be conducted prior to redevelopment. After the Pilot is completed, the site area will include an eco-industrial park, restored wetlands, a nature trail and environmental education center, and a tertiary sewage treatment facility.

Site ID and Characterization

The targeted Brownfields area at this site consists of 155 acres. Phase I and II investigations are designed to determine the extent of contamination at the site. The first parcel is 25 acres in size and is designated as the Town Dump. This site consists of harbor frontage, the former town dump and the main entrance of the park. The second parcel is the Natural Habitat Preserve site and is 28.8 acres in size. Plans for this area include construction of a 1,500 foot boardwalk leading to a beach observation platform, restoration of vegetative cover for migrating neo-tropical songbirds, and construction of a stormwater runoff marsh. The third parcel is designated Parcel A and was formerly used as a bulk storage facility and a municipal dump. Based on the Phase I investigations already performed, subsequent investigations will be at an undeveloped lot adjacent to the town wastewater treatment plant (said to be the site of a bulk oil storage facility), and a closed municipal dump on the southeastern portion of this parcel.

Risk Management & Cleanup

The site may contain hazardous substance materials that may threaten public health and the marine environment. This potential risk must be assessed before the eco-industrial park can be developed.

Community Planning

The approach taken to develop community consensus was by holding a community-wide "charrette" or interactive workshop on redevelopment issues. Through the consensus process, a design was created for the selected site.

Site Marketing

Solar Building Systems is the first tenant of the proposed redevelopment project. This company has taken up temporary operations in a converted vacant school building located off site from the targeted project site area. There are plans to use non-Brownfields land areas (including 111 acres of coastal maritime forest) outside of the targeted 155 acres to add to the attractiveness, usefulness and overall sustainability of the proposed Pilot Project.

Redevelopment Approaches	Solar Building Systems (SBS) is the first tenant of the STIP. The company wants to hire out-of-work crab pickers, (whose former employment involving pulling bits of meat from the shells of Chesapeake Bay crabs required fine-motor coordination), to solder computer chips. Other efforts by the Pilot at the site include; managing some of the adjacent coastal maritime forest as a habitat preserve for a selected endangered species and the restoration of wetlands. The planned redevelopment efforts at this site will enable persons who had been formerly making less than minimum wage working at seafood processing plants to double those wages by working for Solar Building Systems. Terms of the IDA lease require that IDA be responsible for the environmental remediation of these areas.
Technology Applications	Wetlands within the limits of the project area have been delineated and are envisioned as playing a role in tertiary sewage treatment. Solar Building Systems produces siding and roofing material containing energy-producing solar panels.
Project Financing	The Pilot's efforts have resulted in the leveraging of additional resources for the project. These include an \$800,000 Rural Business Enterprise grant from the U.S. Department of Agriculture and the Economic Development Administration. These funds will be used to establish infrastructure in the Industrial Park. The Pilot also received a \$798,000 grant from the Department of the Interior to purchase land adjacent to the Park to extend a nature preserve. The National Oceanic and Atmospheric Administration awarded the Pilot \$190,000 to develop a coastal water quality program.
Legal/Regulatory Initiatives	The Pilot has developed a Master Plan and Comprehensive Design and Operations Standards for the STIP. Based on these documents, the Cape Charles Planning Commission adopted a new STIP zone. The Cape Charles Town Council then rezoned the property into a new STIP zone, dedicated the land for road access and approved subdivision of the industrial park land.
Community Involvement	The charrette and consensus-building process used to select redevelopment plans were community-wide and included participation from minority and low-income populations. The approach used in selecting the redevelopment involved a philosophy that "is good for business, good for the environment and good for the people ...all the people". By involving all members of a community in the process of selecting design plans that benefit everyone, a powerful creative force is generated that enhances the chances for success of the effort.
Environmental Justice	A total of 47% of the 13, 000 persons living in the area are below the poverty level. One of the goals of the redevelopment effort is to produce situations that would allow residents of this community to improve their overall economic conditions. The jobs being offered by the SBS will increase earnings over those previously obtained in the seafood processing plants. The charrette and consensus building process used to select redevelopment plans were community-wide and participation from minority and low-income populations within the community was emphasized.

Pilot Project: Charlotte, NC

<u>Key Elements</u>	<u>Characteristics Identified and How They Contribute to Sustainability</u>
Project Scope, Scale & Goals	The Pilot Project is focused on the South End-Willmore redevelopment area. The goal of the project is to return properties to productive use. The city is establishing clear guidelines for appropriate cleanup levels on selected sites. A model framework for environmental risk decision making to be used by lenders managing Brownfields risk for private investment is also being developed.
Community Profile	The City of Charlotte is an urban center with a population of approximately 395,934, 34.4% of which are minority, with 10.8% of the population living at or below the poverty level. The proposed project target area includes the city's oldest industrial area, the South End/Wilmore district, parts of which date to the latter portion of the 19th century. The Pilot Project area includes an industrial site with a number of abandoned warehouses and manufacturing plants as well as a resident population of 3,469. Although physical improvements have been made to the area in the form of private redevelopment of several mills to retail, entertainment or residential uses, a number of sites remain where activity has yet to occur.
Program/Project Organization	The criteria for selecting sites and determining the amount of funding for site activity were developed by the Pilot Project's Environmental Committee. Assessment funds are divided equally between sites where transactions are already in process for redevelopment and sites identified by the community as priority sites for future redevelopment. Project volunteer groups include law firms, lending institutions, colleges and universities that provide assistance with potential regulatory barriers.
Site ID and Characterization	A core site team consisting of representatives from four neighborhood associations, as well as other stakeholders, participates in the site selection process. Site selection is based on input from community meetings and a set of selection criteria developed for this purpose by the project's Environmental Committee.
Risk Management & Cleanup	Grant funds have been used to negotiate a final agreement for one site, the first such agreement under the State's new Brownfields Act. The agreement will limit future use of site groundwater in exchange for a State promise not to hold the developer responsible for any historic contamination found. The developer will spend 14.5 million on the site, creating approximately 400 jobs.
Community Planning	No data available.
Site Marketing	Plans exist to transform one site into a regional community design center, a place where design related businesses can acquire space for product assembly, hold shows or meetings, and to serve as a resource center for design related businesses. Other sites will be purchased for use as flex space or to expand existing manufacturing facilities for currently operating businesses at nearby sites. Already redeveloped textile mills and factory sites have been used for restaurant, retail, upscale housing and a working trolley line. The stadium and practice facilities for the local professional football team are also located on a former Brownfields site in this region.
Redevelopment Approaches	The Pilot provides information to current property owners to assist in site marketing, clarification of environmental issues and regulations, site assessment funding for qualified sites, and assistance in estimating cleanup costs.

APPENDIX C
SUMMARY OF PILOT PROJECTS ANALYZED

Technology Applications	No data available.
Project Financing	A sponsored workshop for lenders that was attended by 29 lenders representing 10 banks was conducted under the auspices of the Pilot Project. The conference focus was education related to issues, key players, and perspectives common to transactions involving environmental problems. Approximately \$1.5 million in public funding has been invested in the target area. This investment was leveraged to provide additional private funds to redevelop several other properties in the area.
Legal/Regulatory Initiatives	Statewide Brownfields legislation to simplify the regulatory review process and offer covenants not-to-sue was signed in 1997. The result of efforts by the N.C. Citizens for Business and Industry, with participation from the N.C. Department of Environmental Affairs, and the staff of the Charlotte municipal government, this legislation has been cited by the President of the U.S. Conference of Mayors as a model for similar legislation in other states. The State also has a Voluntary Cleanup Program.
Community Involvement	The Pilot produced a public television segment addressing the impact of Brownfields redevelopment and to announce the first public meeting to be held. Subsequently, 3 additional community meetings have been held, supported by several outreach attempts including a mass mailing and door to door distribution of literature. The Pilot Project's public outreach materials have been recognized by an award from the National City County Marketing and Communications Association.
Environmental Justice	The population of the Pilot target area is over 93% minority as opposed to approximately 34% for the city as a whole. Neighborhood concerns presented at public meetings are addressed by the Brownfields coordinators who respond by letter to each of the meetings' attendees.

Pilot Project: Cleveland, OH

<u>Key Elements</u>	<u>Characteristics Identified and How They Contribute to Sustainability</u>
Project Scope, Scale & Goals	This was the first Pilot grant awarded by EPA. A total of 4 sites have been identified. They are the Sunar Hauserman site, the Mid-Town Corridor site, the Collingwood Railyard Site and the Burke Lakefront Airport Site. The objective is prepare for the future reuse of the chosen sites, to ensure that decisions about cleanup and redevelopment are consistent with the needs/expectations of the community, and to ensure that minorities and the disadvantaged are able to participate in BF redevelopment efforts. The initial scope of the project included only the first three of the sites listed above, but a fourth site has now been identified.
Community Profile	Cleveland is located in north central Ohio on the shores of Lake Erie. It is Ohio's second largest city with a population of over 490,000 in the city and the surrounding area. It is the largest municipality in Cuyahoga County. There is extensive industrial and commercial development throughout the city.
Program/Project Organization	The Cuyahoga County Planning Commission (CPC) was selected by EPA as the recipient of the first Brownfields Pilot grant. CPC is working with the Cuyahoga Community College (Tri-C) described as a community/business task force. Other organizational units involved with the Pilot include the Cleveland State University (a recipient of a two-year grant to support the creation of the Brownfields Redevelopment Finance Center to develop models/strategies for resolving Brownfields issues), the Cuyahoga County Council (that developed a revolving loan fund for site assessments), and the assorted municipal entities from the City of Cleveland.
Site ID and Characterization	The Sunar Hauserman site is a 7 acre site with a PCB contamination problem. It has become a successful demonstration site. After the bankruptcy of the original owner, a total of \$4.2 million has been leveraged for environmental cleanup and property improvements. There are several new businesses employing approximately 170 persons and generating over \$1 million per year in income and tax revenue. The Mid-Town corridor (in the vicinity of East 61st and Euclid) has a number of buildings with asbestos contamination. The Collingwood Railyard is a joint Count/City effort designed to transform idle Conrail property into a commercial/retail center on Cleveland's northeast side.
Risk Management & Cleanup	The Sunar Hauserman site is generally considered a successful demonstration site. After the bankruptcy of the original owner, a total of \$4.2 million has been leveraged for environmental cleanup and property improvements. There are several new businesses employing approximately 170 persons and generating over \$1 million per year in income and tax revenue.
Community Planning	Community Planning activities have been typically initiated by the CPC in conjunction with the other organizations working in connection with BF projects. The College has established a community/business task force that ensures broad-based participation and input for the BF effort.
Site Marketing	No data available.
Redevelopment Approaches	No data available.

APPENDIX C
SUMMARY OF PILOT PROJECTS ANALYZED

Technology Applications	Different remedial technologies were used at each site including aquifer sparging with air. Groundwater pumping and soil vapor extraction were used at the Sunar Hauserman Site:
Project Financing	In addition to the \$200,000 obtained from EPA, Cleveland personnel have been able to secure another \$3.2 million for the purpose of extending the redevelopment effort.
Legal/Regulatory Initiatives	The State of Ohio has a Voluntary Cleanup Program that will likely provide assistance in providing the proper remediation in a reasonable amount of time.
Community Involvement	The Tri-C is the organization that is most involved with the various forms of community interruption and outreach. They have: held a forum to discuss risks posed by Brownfields, assisted with the development of high school curricula on environmental issues, initiated the development of programs to provide trained and capable workers to support Brownfields redevelopment efforts, and conducted outreach activities to recruit and train assorted inner-city residents to perform work needed to remediate Brownfields sites. (Note that a decision was made not to proceed with this last program because there was a limited market for these skills.)
Environmental Justice	The extensive involvement of the members of the community (with particular emphasis on the minorities and disadvantaged) with all elements the planning process ensures that knowledge about potential environmental justice issues will be handled.

Pilot Project: East Palo Alto, CA

<u>Key Elements</u>	<u>Characteristics Identified and How They Contribute to Sustainability</u>
Project Scope, Scale & Goals	There are a total of 166 acres of Brownfields areas in East Palo Alto. The goals of this Pilot are to redevelop a large portion of the 130-acre Ravenswood Industrial Area (RIA) complex, create new job opportunities for residents, and increase the city's tax base, and thereby improve community services.
Community Profile	East Palo Alto is ethnically diverse with a population of 25,000 within a 2.5 square mile area. According to the 1990 census, community residents are 86% minority, including: African Americans, Latinos, Pacific Islanders and Asians. The city was incorporated in 1983, but it inherited an inadequate infrastructure, low sales and property tax revenues, no central business district and the 130-acre Ravenswood Industrial Area.
Program/Project Organization	This is a Regional Brownfields grant made to the city of East Palo Alto. As a part of the Pilot cooperative agreement, Region IX EPA will provide a staff person to the City of East Palo Alto through February 6, 1998. The Region IX EPA office and the U.S. Department of Housing and Urban Development (HUD) will also provide assistance to the city in connection with redevelopment efforts pursued under this Pilot. Specifically, Region IX EPA and HUD have joined together to provide Federal staff liaison to work with Brownfields and economic development issues, coordinate Federal and State programs to meet city needs, and identify assistance programs for which the city qualifies. East Palo Alto is also working with the California Regional Water Quality Control Board (CalEPA) to conduct a screening level investigation of soil and groundwater contamination associated with the site.
Site ID and Characterization	The Ravenswood Industrial Area is made up of 59 properties and occupies 130 acres of land. The area overlooks wetlands and the San Francisco Bay at a location situated at the gateway to the technology-based Silicon Valley.
Risk Management & Cleanup	The results of the Phase II investigation performed at the site showed contamination levels to be lower than expected. East Palo Alto is working with the California Regional Water Quality Control Board (CalEPA) to conduct a screening level investigation of soil and groundwater contamination associated with the site. From the process of determining the extent of existing soil and groundwater contamination, it will be possible to identify areas where more comprehensive studies may be needed.

Community Planning

The Regional EPA assisted the city in efforts to conduct community outreach and education meetings to inform residents of the results of the EPA investigation. The Pilot has also established the Ravenswood Industrial Stakeholders Group (RISG). The purpose of this group is to use the results of sampling performed by EPA and CalEPA to develop land use and alternative redevelopment scenarios. The RISG will also identify a process for implementing the redevelopment plan. The Pilot met with the National Carpenter's Union and Opportunities Industrialization Center West to develop ways for both organizations to provide job placement and training for handling hazardous materials. The Pilot plans to look for opportunities to provide this training at other Brownfields Pilots. The Pilot plans to hold at least three seminars for community personnel designed to inform residents about the surrounding wetlands, the Brownfields redevelopment areas, and other environmental factors affecting their neighborhoods. In connection with an existing grant that DePaul University received from the National Institute of Environmental Health Sciences, students from Palo Alto participated in a job-training program. The students received 60 hours of hazardous material worker training, 48 hours of lead, asbestos abatement, and underground storage tank (UST) removal training. Seventeen area residents received this training and they will complete 90 days of on-the-job training with a local environmental cleanup company. There are potential full-time jobs available for some of these persons students at a local chemical solvent recycling company. Attempts are being made to increase outreach efforts to other potential employers in the South Bay areas, and to expand this training program for the area surrounding the RIA site.

Site Marketing

The Pilot plans to conduct outreach activities to attract businesses to the area.

**Redevelopment
Approaches**

The site had originally been home to a hazardous waste recycling facility and also a pesticide manufacturer. Initial estimates were that it would cost \$30 million to remediate the site. A Phase II site investigation has been completed. It showed that contamination levels were lower than expected. Current estimates are that cleanup will range from \$2 million to \$5 million. Future efforts will focus on completing other necessary site assessment efforts and beginning remediation planning. The Pilot plans to consolidate a number of small parcels (with multiple owners) into a single parcel. Because of the site's close proximity to wetlands, the Pilot stakeholders want "green" development that will not degrade the adjacent wetland. One of the plans for redevelopment is to remove industrial blight and upgrade a debilitated access road so that the areas in East Palo Alto adjacent to the wetlands can be used to enhance the recreational use of this area. This would include making improvements that will allow for the use of assorted observation decks for bird watching and pathways for hikers and bicyclists.

Technology Applications

The Pilot plans to conduct a screening level investigation of soil and groundwater contamination associated with the site. Plans were made to use a Geographic Information System (GIS) for collecting a visual map-based description of site conditions.

Project Financing

The amount of the Pilot grant was \$170,000 (initially \$125,000, and later \$45,000). Region IX EPA spent \$300,000 for the Phase II site assessment. No other sources of funding have been identified for the required cleanup or from the total redevelopment process.

**Legal/Regulatory
Initiatives**

East Palo Alto's Redevelopment Agency's First Source Hiring Policy ensures that local residents will be trained and interviewed first for jobs created through redevelopment.

APPENDIX C
SUMMARY OF PILOT PROJECTS ANALYZED

Community Involvement	Regional EPA assisted the city in efforts to conduct community outreach and education meetings to inform residents of the results of the EPA investigation. The Pilot has also established a Ravenswood Industrial Stakeholders Group (RISG) that provides community input to decision making. The purpose of this group is to use the results of sampling performed by EPA and CalEPA to develop land use and alternative redevelopment scenarios. RISG will also identify a process for implementing the redevelopment plan. The Pilot met with the National Carpenter's Union (United Brotherhood of Carpenters) and Opportunities Industrialization Center West to determine ways for both organizations to provide job placement and training for handling hazardous materials handling. The Pilot plans to look for opportunities to provide this training at other Brownfields Pilots.
Environmental Justice	Many of the efforts being performed by the Pilot are designed to address environmental justice issues. Community residents participated in a job-training program. The students received 60 hours of hazardous material worker training, 48 hours of lead, asbestos abatement, and underground storage tank (UST) removal training, and other UST related training. Seventeen area residents received this training and they will complete 90 days of on-the-job training with a local environmental cleanup company. There are potential full-time jobs available for some of these students at a local chemical solvent recycling company. Attempts are being made to increase outreach efforts to other potential employers in the South Bay areas, and to expand this training program for the area surrounding the RIA site.

Pilot Project: Greenfield, Massachusetts

<u>Key Elements</u>	<u>Characteristics Identified and How They Contribute to Sustainability</u>
Project Scope, Scale & Goals	The Pilot Project is focused on an abandoned 145,000 sq. ft. machine tool manufacturing plant located along the Green River, on which open containers of hazardous material have been identified. The property covers 13 acres. The goals of the project are to evaluate the environmental concerns at the site; explore an innovative cooperative model for site assessment; create redevelopment opportunities; and plan for the restoration of the site as an asset to a blighted neighborhood.
Community Profile	Greenfield is a small town with a population of 18,026. The town has an unemployment rate of 5.4% and has been designated as an Economic Target Area by the Commonwealth of Massachusetts. The town has experienced a 37% loss in manufacturing jobs between 1980 and 1990.
Program/Project Organization	The project will develop a cooperative partnership among the local government, State environmental agencies, private consultants, and students from the University of Massachusetts.
Site ID and Characterization	Activities planned as part of this Pilot include: site investigation and remedial planning and determining future land-use options for the site.
Risk Management & Cleanup	No data available.
Community Planning	No data available.
Site Marketing	Several Possible uses for the site include a cultural center, office space, and a museum.
Redevelopment Approaches	Redevelopment of the site could provide needed space for local business expansion.
Technology Applications	The project is focused on developing model approaches to reducing cleanup costs. Models will be evaluated for replicability.
Project Financing	The project will identify funding sources to include private sector developers who will assist in cleanup and redevelopment.
Legal/Regulatory Initiatives	No data available.
Community Involvement	No data available.
Environmental Justice	No data available.

APPENDIX C
SUMMARY OF PILOT PROJECTS ANALYZED

Pilot Project: Navajo Nation

<u>Key Elements</u>	<u>Characteristics Identified and How They Contribute to Sustainability</u>
Project Scope, Scale & Goals	The Pilot focuses on the former Navajo Forest Product Industries mill property, a 10.5-acre site that included a particleboard factory and millworks with machinery and maintenance shops. Five objectives of the project are to identify all hazardous substances on-site & in groundwater; assess public health and environmental risks; educate the community; develop a remedial design; and, cleanup & revitalize the industrial complex.
Community Profile	The Navajo Nation mill site is located in a rural section of NW New Mexico with 2,293 residents, predominantly Native Americans. The mill complex shut down in 1995 resulting in loss of 300 jobs and annual sales over \$20 million. About half the population is impoverished with few other local employment options.
Program/Project Organization	The Pilot is led by Navajo Nation Environmental Protection Agency (NNEPA) who hired a full-time Pilot Project Coordinator. Local residents/tribal members are involved. There is also close cooperation with Federal EPA Region IX.
Site ID and Characterization	The site contains 32 buildings, hazardous and solid waste problem areas including PCB-contaminated transformers, capacitors and stained soil; discarded batteries; barrels of acids, solvents and petroleum products; and a wash trough with unidentified solvent. A wood chip and particleboard dump area has smoldered in the past. A PA was completed and a SI is planned.
Risk Management & Cleanup	The Navajo Nation is planning a voluntary cleanup program removal response at the site once tribal general funds are obtained. Pilot funding will be used for site assessment and developing a remedial design plan.
Community Planning	A community outreach effort is underway to identify local community needs and concerns through an education campaign in the Navajo language. A local high school class plans to develop a video(s) of the site assessment and cleanup efforts. Public tribal meetings are held as needed.
Site Marketing	No data available.
Redevelopment Approaches	The Navajo Nation's Red Lake Chapter (the tribal equivalent to a county) is considering a lease of all or part of the complex to a regional lumber milling company which will conduct operations under a new 10-Year Forest Management Plan. Restoring milling activities would enable many of those laid off to return to work.
Technology Applications	The project is obtaining technical assistance from USEPA for site assessment and screening technologies. The plan is to reuse as much of the existing facilities and machinery as possible.
Project Financing	The Pilot is financing much of the organizational, site assessment, and community outreach efforts. Tribal meetings are occurring to obtain tribal concurrence for remedial financing.
Legal/Regulatory Initiatives	No data available.

APPENDIX C
SUMMARY OF PILOT PROJECTS ANALYZED

Community Involvement	All activities are being led and conducted by tribal members who are also residents of The Navajo Nation. Local residents are to be trained by USEPA to conduct site assessment and hazardous waste site cleanup. The local university is assisting with videos of the complex for historical documentation.
Environmental Justice	Former mill operations were the livelihood of the local, socioeconomically distressed community. A Majority of residents are under 50 years old with only a high school education or less.

Pilot Project: New Orleans, LA

<u>Key Elements</u>	<u>Characteristics Identified and How They Contribute to Sustainability</u>
Project Scope, Scale & Goals	The Pilot goal is to develop an inventory of Brownfields sites in the city to aid city planners, developers and investors in restoring the properties. The immediate objectives were to identify sites; develop criteria to rank the sites in terms of economic redevelopment potential; develop a basic cleanup process; and, generate redevelopment strategies for 5-10 of the sites.
Community Profile	New Orleans is noted for its cultural diversity with 65% of its more than 480,000 population of African American descent. The city is located adjacent to two major waterways-the Mississippi River and Lake Ponchartrain, at the foot of the "chemical corridor" whose port, rail, and highway systems transport a high volume of hazardous materials. Since October 1990, the city has emphasized economic development planning to revitalize major sections of the City and its neighborhoods. Brownfields identification and redevelopment strategies were incorporated into the planning efforts in 1995. The city has been designated a HUD Enterprise Community.
Program/Project Organization	The Brownfields program and Pilot Projects are coordinated by the city's Office of Environmental Affairs (OEA) which is located within the city's Economic Development Division. This ensures coordination between the Economic Development and Policy Planning staff and the Mayor's Environmental Strike Force. The OEA chairs the Brownfields Consortium, a broad representation of state/city agencies, bankers, developers, and citizen groups. A professional facilitator coordinates the day-to-day activities and meetings of the Consortium.
Site ID and Characterization	Through a series of community meetings and surveys of city public works components, 167 potential Brownfields sites were identified and screened down to the top ten. The screening required several tiers of criteria that included location, potential for contamination problems based on past use, windshield surveys, investment community requirements, and actual Phase II testing data from an EPA mobile analytical lab. Several sites have USTs, asbestos, and potential lead pollution problems.
Risk Management & Cleanup	Liability issues are to be addressed through EPA Letters of Comfort. The consortium is charged with identifying sources of funding for site remediation on a site-by-site basis.
Community Planning	The Brownfields inventory and redevelopment strategy will be integrated into the comprehensive "New Century New Orleans" Master Policy Plan and a subset Riverfront Strategic Policy Plan, to provide a policy framework that directs and guides future development. These plans also serve as a stakeholders' consensus of citizens, professionals, and politicians.
Site Marketing	The OEA and Brownfields Consortium have developed a draft Brownfields Marketing Plan that outlines five phases of planning and activity for (1) community participation; (2) stakeholder involvement; (3) "collaterals" or information management and presentation; (4) marketing initiatives; and, (5) public relations.
Redevelopment Approaches	A variety of possible reuses will be considered based on community involvement and property owner, developer, and lender discussions. Two sites are being considered by developers for residential or low-income housing.

APPENDIX C
SUMMARY OF PILOT PROJECTS ANALYZED

Technology Applications	The Pilot used EPA's mobile analytical lab to expedite Phase II field characterization of five properties within the top ten. The city's planning and economic development GIS database is being augmented with Brownfields sites.
Project Financing	The consortium is charged with identifying sources of funding for remediation on a site -by-site basis.
Legal/Regulatory Initiatives	No data available.
Community Involvement	The extensive role for community involvement is outlined in the city's Brownfields Marketing Plan. A professional facilitator has provided effective support in coordinating and integrating community input.
Environmental Justice	Many of the city's Brownfields are located near transportation routes that are adjacent to low income, African-American residential neighborhoods. A current lack of information on Brownfields sites' history prevents new development, and the attendant jobs and training for neighborhood residents, from taking place. Historically, residents have been removed from decision-making about industrial and economic activities in the community. Public involvement in site cleanup and redevelopment plans will address these problems.

Pilot Project: Oregon Mill Site Conversion, OR

<u>Key Elements</u>	<u>Characteristics Identified and How They Contribute to Sustainability</u>
Project Scope, Scale & Goals	This rural area Pilot targets 9 abandoned mill sites located in 9 different towns in Oregon, which cover a combined total of 550 acres. The objective of this Pilot is to rehabilitate these vacant and abandoned mills into productive industrial/commercial properties that will enable surrounding communities to attract business that bring new and diverse employment opportunities.
Community Profile	Since 1988, cutbacks and closures of 119 lumber and wood product facilities occurred in 23 primarily timber-dependant rural communities. These closures have economically devastated the communities by depressing mill property values, reducing the tax base, creating abandoned infrastructure, decreasing family incomes, and increasing the focus on greenfields for any new development. In many communities, these mill sites are the only zoned industrial property within designated growth boundaries.
Program/Project Organization	The project organization is a public/private partnership. It is managed by a non-profit corporation with expertise in rural community business development strategies, operating under the overall coordination of the State Economic Development Department, and supported by a private utility, bank, and law firm as well as other State/Federal agencies. A project advisory committee, consisting of representatives from the partnership groups as well as others with particular expertise, has been formed. Due to the geographic distribution of sites, Local Action Committees exist for each site. These committees consist of city/county/local economic development groups representing citizens & businesses.
Site ID and Characterization	Most sites have combined, and completed Phase I environmental assessments with wetlands determinations and Phase II Assessments with wetlands delineations.
Risk Management & Cleanup	The Pilot is evaluating the potential for using generic cleanup options to help developers assess cleanup liability, financing options, and development risks; and to establish cleanup standards for similar abandoned mill sites. The Pilot is also creating a computer model to measure cost/benefit of various cleanup options.
Community Planning	Local Action Committees (LAC) are responsible for developing redevelopment plans tailored to each site that are consistent with their economic development plans and that consider land use, wetland mitigation, cleanup, and redevelopment incentives. Each LAC will create outreach plans to ensure broad community input to cleanup and redevelopment efforts.
Site Marketing	The project organization and composition of partners is heavily focused on rural/urban site marketing and redevelopment. The LACs are developing marketing strategies as part of local redevelopment plans.
Redevelopment Approaches	Site-specific reuse plans consistent with local redevelopment plans/opportunities/strategies are being developed, infrastructure needs, environmental land-use planning requirements, and goals of developers/private property owners are key components of the project effort.
Technology Applications	No data available.

APPENDIX C
SUMMARY OF PILOT PROJECTS ANALYZED

Project Financing	Project funding comes primarily from partnership members and EPA grants. Other state/Federal programs are being leveraged. Pilot plans include privately financed site cleanup as part of the redevelopment effort.
Legal/Regulatory Initiatives	No data available.
Community Involvement	Local Advisory Committees coordinate community awareness, input and participation. Public utilities support the publication of a Project Newsletter circulated throughout affected communities to increase awareness of ongoing issues/developments.
Environmental Justice	The Pilot is emphasizing community awareness programs to address risk communication with local citizens.

Pilot Project: State of Rhode Island

<u>Key Elements</u>	<u>Characteristics Identified and How They Contribute to Sustainability</u>
Project Scope, Scale & Goals	The Pilot focus is on 50 potential Brownfields sites located in multiple communities within the watersheds of the Woonasquatucket and Blackstone Rivers. Site inventories are incomplete and are not cross-referenced with economic developmental potential. The goal is to create a model ecosystem-based program to return sites to beneficial use. The objectives include coordination with multiple State and local agencies, providing a degree of certainty in levels of contamination, and the leveraging of additional resources.
Community Profile	The project involves two urbanized areas and three rural towns in the north-central portion of the State. Historically, these communities were formed from villages that grew around mills along the rivers. After decades of heavy industrial use, then a rapid decline in mill industries, many contaminated properties are left for decay. No demographic data is available.
Program/Project Organization	Because most of the affected communities have only minimal organizational infrastructure, the Rhode Island Department of Environmental Management (RIDEM) has taken the lead in coordination and implementation. Other state and local agencies, the RI Port Authority and Economic Development Corporation (Port Authority) and citizen action groups support project implementation and communications. For local municipalities, the focus is on either the Planning or Economic Development offices for coordination.
Site ID and Characterization	RIDEM conducted a regional survey in which municipalities nominated 120 potential sites. RIDEM then screened these sites down to 50 and conducted Phase I Baseline Property Surveys. Stakeholder roundtables prioritized the sites and selected the top 24 sites based on Phase I data, community concerns, environmental threat, and potential reuse. Phase II site assessments/remedial evaluations are being conducted by RIDEM with more underway. One key is the regional coordination to identify, screen & prioritize sites. At one site, RIDEM & EPA are conducting "targeted assessment."
Risk Management & Cleanup	The Pilot is leveraging site cleanup with others (ex. agreement with prospective purchaser to install monitoring wells and conduct analytical testing; U.S. Coast Guard removal action of leaking UST into river). The State "Industrial Property Remediation and Reuse Act, 1995" provides documented future use-based cleanup objectives, liability releases under certain situations, and covenants not to sue based on site settlement agreements.
Community Planning	Although communities have Community Master Plans, trying to integrate Brownfields into the existing plans is difficult and time consuming. RIDEM is working with established community action groups to involve the community in planning processes (ex. The Providence Plan for the Woonasquatucket River Greenway Project).
Site Marketing	The "Rhode Island Mill Building and Economic Revitalization Act, 1996" provides economic incentives and a streamlined permits process to stimulate reuse & redevelopment of former mill sites.
Redevelopment Approaches	The Pilot is taking an ecosystem management approach to redevelopment within the watershed. The focus is on creating employment opportunities and upgraded affordable housing for low income residents in Brownfields neighborhoods. The Narragansett Knitting site being considered for a high-tech incubator project.

APPENDIX C
SUMMARY OF PILOT PROJECTS ANALYZED

Technology Applications	No data available.
Project Financing	In addition to leveraging with community economic development funds, the State's Industrial Property Act authorizes a revolving fund created by a vehicle tire storage, remediation and recycling program and an \$8 million initial appropriation. The State's Mill Site Act provides a series of tax credits for owners/operators of "certified" mill buildings.
Legal/Regulatory Initiatives	The State has passed two key laws to stimulate remedial investigation, cleanup and reuse of industrial sites and former mill site buildings. Provisions of these laws address liability, cleanup standards, site closure, and financing vehicles.
Community Involvement	Community involvement is primarily through municipal agencies and existing community action groups. Creation of new, Brownfields focused groups is discouraged due to historical distrust between citizens and government agencies.
Environmental Justice	No data available.

Pilot Project: Trenton, NJ

<u>Key Elements</u>	<u>Characteristics Identified and How They Contribute to Sustainability</u>
Project Scope, Scale & Goals	Trenton's Pilot focuses on 15 Brownfields sites on 23 acres. It has also targeted more than 600 acres within an urban EZ having potential Brownfields. It is seeking to engage the entire community, especially affected neighborhoods, to identify the problems, opportunities and resources associated with the sites; and to identify financial resources to develop a comprehensive strategy for site assessment, cleanup and reuse. The goal is to serve as model for small, former industrial cities, create a model for institutional change in the overall site remediation process, and be a model for using community development corporations and others in innovative technical & managerial processes.
Community Profile	Trenton, a city located in west-central NJ with 89,000 in population, was a prominent 19th century manufacturing center that has greatly declined, leaving a large number of potential Brownfields sites. A large portion of the city's minority populations live in neighborhoods surrounding vacant industrial sites, with unemployment between 15 and 25% and a poverty rate of about 18%. The city also has several miles of riverfront property along the Delaware River.
Program/Project Organization	The city's Dept. of Housing and Development has a lead role with several primary groups as partners - the BEST advisory council, a non-profit community development corporation, the Eco-industrial park roundtable discussion group, and the Trenton Enterprise Initiative Coordinating Committee. The partnership also includes other key university and community development organizations.
Site ID and Characterization	The city created an Environmental Assessment Plan based on the experience of the NJ State ECRA and ISRA programs. All 23 acres of Pilot Project properties have been assessed. Cleanup is underway at two sites (12 acres combined). A proposal has been made to the State to amend its ISRA program to extend grant funding to include remedial investigations to better determine the extent of contamination and the cost of remediation - essential information to market the site for privately financed remediation.
Risk Management & Cleanup	To overcome developer fears of liability and to kick-start restoration efforts, the City is taking aggressive actions to acquire Brownfields sites through tax foreclosures, sale of tax certificates, condemnation, or eminent domain if needed. The city is then able to leverage State/Federal funds for assessment, cleanup and reconstruction. It then enters into lease-purchase arrangements with private developers who establish businesses on site. NJ ISRA allows both permanent & non-permanent cleanups to either residential or less stringent standards. Also the State uses engineering and institutional controls to reduce risk to 1-ppm; and also has a special cleanup flexibility for "historic fill" sites.
Community Planning	Brownfields program efforts are being coordinated with the Trenton Enterprise Initiative planning process that includes representatives from every sector of the community.
Site Marketing	The city is working closely with private developers and community development corporations to market sites. City ownership and liability are seen as a big benefit. Ideally, the city has interested developers and projects lined up before the transfer of property. For each site, the city performs environmentally-related market analyses to identify industries suitable for sites.

APPENDIX C
SUMMARY OF PILOT PROJECTS ANALYZED

Redevelopment Approaches	Approaches are tailored to individual sites depending on acreage, existing building capacity, and location. Examples include an upscale candle manufacturing plant, a food processing plant with retail outlet & cafe, a performing arts center and YMCA, and a community service supermarket, drugstore & dry cleaner. An Eco-Industrial Roundtable Discussion Group has been formed to explore the concept of eco-industrial parks, promote ideas for projects in the city, and to recruit "green businesses."
Technology Applications	The project is using phytoremediation at one site and exploring the eco-industrial parks concept.
Project Financing	Progress of the Pilot so far has primarily been due to Federal and State grants. Nearly all site assessment and site cleanup has been accomplished through grant funds. One site that the city cleaned-up will be sold/leased to private business; proceeds will be used to establish a Municipal revolving fund for additional remediation. The project has leveraged the UEZ Assistance Fund, UDAG repayment funds, DEP/EDA loans & grants, and private developer/foundation money use to access technical and regulatory assistance.
Legal/Regulatory Initiatives	The city is working with State agencies to restructure NJ's Industrial Site Recovery Act (ISRA) to include remedial investigations, to restructure loan repayment terms to coincide with incremental project revenues, and to promote new legislation to create State "Environmental Opportunity Zones."
Community Involvement	Using grant funds, the city has hired Isles, Inc., a non-profit community development corporation that coordinates and implements much of the City's community outreach and communication efforts. Emphasis is placed on two-way communication and citizen involvement through community advisory groups; and University/Federal agency/technical institute support in risk communications.
Environmental Justice	The city's emphasis is on Brownfields sites in low and moderate income, minority neighborhoods. The sooner sites are cleaned-up, the sooner blighted areas can be restored, depressed properties values increased, and overall quality of life improved. The cleanup process includes training and use of local residents. Community meetings are used to engage residents in the process, seek their input, and educate them on the nature of hazards and potential remedies. The city is developing a green curriculum in schools; exploring green job opportunities for local residents through community college & state college assistance.

Pilot Project: West Central Municipal Conference

Key Elements

Characteristics Identified and How They Contribute to Sustainability

Project Scope, Scale & Goals

For this Pilot, the goal is to select two publicly-owned sites and two privately-owned sites for redevelopment. The Pilot created a Rapid Response Team (RRT) comprised of experts from the legal, environmental, real estate, community involvement and regulatory fields. This team provides timely expertise and guidance to the major stakeholders associated with the Brownfields redevelopment process, including property owners, developers, real estate brokers, community members, lenders and municipal officials. The Pilot is also working to establish a Brownfields Prevention Program (BPP) that identifies ongoing industrial activities that have the potential for creating future Brownfields. The BPP is also designed to create a strategy for strengthening community-municipal-industry partnerships to encourage environmentally sound community development.

Community Profile

The West Central Municipal Conference (WCMC) communities are mature "inner ring" suburbs that have recently experienced a steady loss of jobs and population as businesses have relocated to "greenfields" sited in more rural areas. Left behind are an increasing number of abandoned and under-used industrial sites, many of which are contaminated with hazardous substances. The WCMC is a regional organization that is comprised of representatives from the member municipalities.

Program/Project Organization

The WCMC is a regional council comprised of 36 municipalities that cover a total area of 200 square miles in suburban Cook County, west of Chicago. Members of the RRT are responsible for operational details associated with implementing the operational elements of this Brownfields project. They visit the property owners and follow through with the other actions required for redevelopment of the Brownfields areas.

Site ID and Characterization

A total of four sites have been identified. The first is in the city of Oak Park and involves the conversion of a 12,000 square-foot store front style retail building into a strip mall. The second project is a one-acre site in the Town of Cicero; the goal is to develop a comprehensive environmental assessment and site redevelopment plan. The third site is an abandoned gas station in the Village of Bellwood. The fourth site is located in the Village of Schiller Park. The owner of this property has offered the property to the village at no cost. However, the Village wants to perform sampling at the site before accepting the property. If analytical results are found acceptable, the property will be used for storm water retention, ponds, public parking, a street extension and other still-to-be-defined private development.

Risk Management & Cleanup

Each of the identified properties has different contaminants, and each property poses different risks to public health and the environment. As a result, there likely will be individualized sets of cleanup procedures for the specific contamination situation present at each site. The gas station building in Bellwood has been razed and plans are being prepared for the removal of two 10,200 gallon, three 3,000 gallon and two 560 gallon underground storage tanks. Assessment activities, including the review of analytical laboratory data resulting from media sampling, have been performed for selected sites.

Community Planning

The Pilot has developed an outreach program that targets municipalities, businesses, civic groups and community groups. Other community planning activities may be associated with the internal operations of the member municipal governments.

APPENDIX C
SUMMARY OF PILOT PROJECTS ANALYZED

Site Marketing	Before a site is selected for inclusion for consideration within the project, it must have some inherent marketability, and be included as an integral part of the redevelopment process being implemented by WCMC. Site identification is performed by a number of outreach activities. After identification, the RRT visits the owner to determine possible interests in redevelopment of the property.
Redevelopment Approaches	After sites have been identified and selected, members of the RRT interact with property owners and other organizations, as necessary, to move toward implementation of the selected redevelopment.
Technology Applications	EPA Region V used their Mobile Laboratory to conduct limited surface soil analyses to assess possible environmental problems at selected locations within the WCMC Pilot target areas.
Project Financing	The Pilot is actively investigating alternative financing mechanisms to fund cleanup and redevelopment of Brownfields sites. A specific interest is identifying public sector financing methods, that hold promise for site cleanups. Examples include Community Development Block Grant program, Empowerment Zones and Tax Increment Financing, and the Illinois Development Finance Authority. Through discussions with the Department of Commerce, a number of grants were identified that could be used by municipalities for the cleanup of Brownfields properties. Through the Economic Development Administration's Technical Assistance Program, funds are available for inventorying potential sites, performing market analyses, and Phase I Assessments. Pilot personnel are also working with local lending institutions to develop a revolving loan fund.
Legal/Regulatory Initiatives	The Illinois EPA has indicated its willingness to process Brownfields sites through the Illinois Pre-Notice site Cleanup Program. The Pre-Notice Program allows site owners to remediate contaminated sites under the guidance of the State agency, and receive a release from responsibility for future corrective or preventative measures.
Community Involvement	The Pilot has developed an outreach program that targets municipalities, businesses, civic groups and community groups. Control and direction of the Pilot rests with the WCMC, a regional construct comprised of personnel from the member municipal governments. Community involvement in this Pilot's redevelopment process is reflected to the extent that community input flows through the member municipalities, and that input is obtained by WCMC's outreach program.
Environmental Justice	The municipalities that comprise the WCMC represent a wide range of ethnically and socioeconomically diverse populations. In general, community redevelopment activities are designed to improve the conditions in inner-city environments, the place where minorities and lower-income populations tend to be concentrated.

Appendix D - Program Information Sources Used in this Study

Source	Sponsoring Organization	Description	Reference
Americans for Indian Opportunity	Americans for Indian Opportunity, Inc. (AIO)	Serves as a catalyst for new concepts for Native peoples. Based around traditional tribal values, AIO promotes modern ways to help deal with complex issues of 21 st Century. Has worked with EPA to assist Tribes to identify Brownfields on Tribal lands.	Error! Bookmark not defined.
Bank of America Brownfields Report	BankAmerica Corporation	Issue papers related to sustainable development, urban sprawl, conservation planning, private sector financing for Brownfields, and a bibliography.	Error! Bookmark not defined.
The Brownfields Center	Carnegie Mellon University	Discussion of Brownfields development, urban renewal, infrastructure and urban sprawl issues. Detailed case study information provided.	Error! Bookmark not defined.
Clean-start Properties Unlimited	Clean-start Properties Unlimited	List of available properties and characteristics, marketing information, State Brownfields programs, special interest reports, case studies, and references.	Error! Bookmark not defined.
Coalition for Healthy Cities	Coalition for Healthy Cities and Communities	Describes an initiative to improve health and quality of life of cities and communities at the local level. This is done by organizing business, government, and health sectors to address local issues and needs. Through "www.lnvalley.org" the site includes links to community redevelopment projects and other information about the international healthy cities/communities movement.	Error! Bookmark not defined.
Center of Excellence for Sustainable Development (CESD) Industrial Ecology	US DOE Center of Excellence for Sustainable Development	This web site provides information to help communities design and implement innovative strategies to enhance the local economy, local environment and quality of life. US Department of Energy's Office of Energy Efficiency and Renewable Energy created the Center of Excellence for Sustainable Development. The site contains substantial information on sustainable development.	Error! Bookmark not defined.
Fink Zausmer, Brownfields Page	Fink Zausmer, PC	Federal and State environmental laws and Brownfields related legal cases.	Error! Bookmark not defined.
Global Business Network Homepage	Global Business Network (GBN)	GBN is a unique network of organizations and individuals committed to re-perceiving the present in order to anticipate the future and better manage strategic response. The members host meetings, conferences and produce and/or identify relevant publications. Through these activities their objectives include exploring emerging trends, delving into diverse/challenging ideas, generating collaborative thinking about the business environment, and enhancing learning and networking among the membership. The group also provides consulting and training services.	Error! Bookmark not defined.
Institute for Responsible Management Brownfields Pilots' Database	The Institute for Responsible Management, Inc.	Comprehensive Brownfields information including site assessment, remediation, land use/development, financial, and outreach. Pilot's Newsletter.	Error! Bookmark not defined.
International Development Research Centre	International Development Research Centre, Canada	Information on sustainable use, economic programs, international research, sustainable economy and environment issues, and a catalogue of publications.	Error! Bookmark not defined.
National Environmental Justice Advisory Council Homepage	TetraTech EM, Inc. (as a consultant to US EPA)	Provides information about the efforts of NEJAC and other environmental justice topics.	www.prcemi.com/nejac

Appendix D - Program Information Sources Used in this Study

Source	Sponsoring Organization	Description	Reference
Northeast-Midwest Institute Environmental Quality	The Northeast-Midwest Institute	Discussion of Brownfields reuse and financing issues, economic development, case studies of lessons learned and an overview of Federal legislation.	Error! Bookmark not defined.
President's Council on Sustainable Development	The White House	Issues of national vision and policy for sustainable development, information on the National Summit for Sustainable Development.	Error! Bookmark not defined.
Santa Monica Sustainable City	City of Santa Monica, CA, Environmental Programs Division	Provides a description of the Santa Monica Program including resources and policies, as well as open space programs, social science, and economic development.	Error! Bookmark not defined.
Smart Growth Network	The Smart Growth Network	Information related to eco-industrial park development, case studies and urban sprawl.	Error! Bookmark not defined.
Sustainable Chattanooga	Chattanooga Online	Extensive discussion of issues related to sustainable development and project related information on specific Chattanooga projects.	Error! Bookmark not defined.
Sustainable Communities Network	Sustainable Communities Network Partnership	Information on community resources, natural resources, economy, government activity and case study data.	Error! Bookmark not defined.
Sustainable Minnesota	ME ³ - Minnesotans for an Energy Efficient Economy	Discussions of energy related issues, sprawl, economic and environmental costs of sprawl.	Error! Bookmark not defined.
US Conference of Mayors Homepage	US Conference of Mayors	Collection of information from the city government's perspective. Includes Brownfields information obtainable through the homepage's search engine.	www.usmayors.org/
US DOE, Center of Excellence for Sustainable Development	U.S. Department of Energy	Sustainable redevelopment issues including: open space, TDR, land trusts, transit oriented development, and urban forestry.	Error! Bookmark not defined.
US EPA Brownfields Homepage	US EPA Headquarters	The focus of US EPA's information on the Internet relating to Brownfields.	Error! Bookmark not defined.
US EPA Brownfields Information Management Database	US EPA Headquarters	Computerized database of EPA Brownfields program information and detailed summaries of each Pilot Project.	(Access via EPA's intranet only)
US EPA Environmental Justice Homepage	US EPA Headquarters	Provides information relating to EPA's environmental justice program.	www.epa.gov/swerosps/ej
US EPA Region 5 Brownfields Homepage	US EPA Region 5	Describes efforts and programs in Region 5 relating to its industrial land reclamation program.	Error! Bookmark not defined.
US HUD Habitat II (Best Practices) Database	The Together Foundation and the United Nations Centre for Human Settlements (UNCHS)	A searchable database containing proven solutions to common urban problems facing the world's cities today. The sponsoring organizations have compiled this collection of Best Practices information that has been submitted by communities from around the world. The information was first presented at the United Nations Habitat II City Summit held in June 1996.	www.bestpractices.org
Wisconsin Brownfields	GZA Geoenvironmental Technologies, Inc.	Sections devoted to land use, liability issues, State regulations and Wisconsin programs.	Error! Bookmark not defined.
World Resources Institute	World Resources Institute	Topics include sustainable trade, environment and health issues, business and environmental links Also available are portions of "World Resources, 1996-97, A Guide to the Global Environment" including "Part I -The Urban Environment."	Error! Bookmark not defined.

Appendix E - Summary of EPA and Federal Agency Interviews

The following four sections are a summary presentation of the information that was collected for this study from primary sources through interviews with selected representatives of Federal agencies, municipal governments and individual Pilot Projects. For purposes of this presentation, the original interview notes have been collected and organized under major headings to correspond to specific issue areas determined to be important to this exploratory phase of the study.

Although the material presented here is in the form of declarative statements, these are summary in nature and do not represent direct quotations attributable to any single individual within the group of respondents. Editorial modifications have been added, where necessary, to disguise the original respondent or to classify, condense, clarify, or combine the information under each of the headings.

1. Summary of EPA Sources

Number of respondents: 7

1.1 Definition of Sustainability (Sustainable Development)

- There are two vastly different issues: 1) to use the Brownfields Pilot Program to catalyze and sustain the redevelopment process itself; and 2) as a secondary outcome or objective of the process. Brownfields should contribute to the environmental and socioeconomic sustainability of the Pilot cities.
- An appropriate definition of sustainability can be found in the Brundtland Commission report; development that meets the needs of the present without compromising the ability of future generations, etc.
- The requirement to be sustainable represents a potential burden on Brownfields development, requiring a greater standard that greenfields development does not have. Brownfields do not need a higher standard that discourages redevelopment and stimulates greenfields or fringe development. Therefore, we should not measure sustainability or require it on the Brownfields property/project scale.
- Sustainability should further the Brownfields effort, not hinder it by imposing strict requirements and decreasing the chances for success. It should not become a yoke around the development process, impeding cleanup and development possibilities.
- There is a need to look for incentives to encourage reuse and development whether or not it is sustainable. Brownfields shouldn't focus solely on sustainable reuse.
- Sustainability requirements are extremely important issues, but they do not necessarily always relate to the Brownfields issues.

- There is a need to balance sustainable land use policy with the economic requirements of the community.
- Sustainable development implies improved land use planning to integrate mixed use, urban growth, greenspaces, transportation, etc.
- Sustainable development incorporates a Smart Growth strategy.
- Sustainable development can be combined with other aspects of long-term planning, such as public transportation policy, incentives to develop and use public transportation, workforce training programs, greenspace development, university internship programs, environmental cleanup, etc.
- The eco - industrial park is an example of an attempt to achieve sustainability at the project level; applying the efficiency principals and practices of the industrial ecology model. Eco-industrial parks are economically more efficient than the alternative. They tend to create interdependencies among business elements which enhance community stability (i.e. interdependent businesses are less likely to move if they are in close proximity to the other businesses on which they depend).
- A sustainable development will provide goods and services that local people will buy at prices they usually pay.
- Sustainability refers to something that reflects community desires and values, and positively sustains and supports the community in the way in which it wants to be supported.
- An example of a sustainable development is found in the Jamaica Plains Neighborhood Development Corporation project. This project attempted to replicate the number of jobs in the community that were lost when the original industry closed. The experience gained from the initial project was leveraged to develop additional projects, such as a multiple use center for the neighborhood.
- A key element for sustainability is the need for the support of both the political hierarchy and the general public. The public push is necessary to get the political leadership committed to the project.
- A project does not necessarily require the immediate commitment of a developer, but it does require the full commitment of the local government. Sustainability hinges on a commitment by the local government to make things work.
- The interim use of property may be the best choice for Brownfield property in lieu of long-term sustainable development. Interim use is based on the expectation that funds will be there in the future to finish the cleanup, but meanwhile the site is in use and generating revenue, even though a total cleanup for residential development would not have been practical.
- Brownfields Pilots are a great opportunity to bring together coalitions of groups with common goals, among which sustainability is a major theme and is incorporated into the groups' agendas. Sustainability is introduced to the Brownfields project through the efforts of these groups.

- The basics of the Brownfields Pilot process are the identification of candidate sites, assessment of potential contamination, and the beginning of the redevelopment planning process. The consideration of sustainability is a part of the Brownfields Pilot Project Award application process however, most of the Pilots have not yet reached the stage where sustainability is a concern.

1.2 Sustainability and Self-sustainability

- Sustainability can be seen as a hierarchy moving from the most extreme case of self-sustainability, a long-term closed loop process at one end (e.g. an eco-industrial park where the waste products from one industry are used as components in the production process of others), to the opposite extreme of a short-term environmentally friendly development (e.g. the business that is essentially environmentally friendly - not really meeting the criteria of sustainability - but operating in an environmentally sound way) at the other end.
- The Brownfields sustainability approach should be: first do no harm; then the further up the continuum of increasing sustainability we can move from there, the better.
- It is necessary that all projects eventually become self-sustainable through a local government - private enterprise partnership structure.
- Ideally, the Pilots would maximize leverage of the Federal government's involvement and funds to develop a project and then strive for "self-sustainability."
- The Federal role should serve to change the dynamics of the process and then be withdrawn. The Federal "Big Brother" notion dooms a project to failure. The Brownfields Program should be able to go out of Business in 5 years in favor of sustaining private development and local control.
- The level of project sustainability will vary according to the level of government input required.

1.3 Conceptualization of Brownfields Initiative

- Chicago began the Brownfields process when it conducted a large forum on the Brownfields issue. They were essentially looking for something creative to address the urban blight problem. The political structure of the city put the force of commitment behind the program, and the municipal government issued bonds to finance Brownfields identification and assessment efforts. This effort really spawned the Brownfields concept.
- Brownfields is a different program model and it is not completely defined. The paradigm is still being assembled in a pattern that is different for every community.
- Every project is so unique and the available resources (especially funds) are so fractionated that each project has to develop its own distinct approach and there is little similarity between them.
- The Brownfields process is very different from the approach common to superfund sites. Brownfields is more of a "removal" exercise, (i.e., not a single process or strict procedure, but rather an assortment of processes and measures to be taken as various situations arise).

- The Brownfields process is an iterative one - unlike the more straight-line superfund approach - where key elements interplay as the situation develops. There are a number of parallel processes involved; all of which are going on simultaneously during a project.
- The Brownfields process uses a different paradigm; it is a locally driven initiative. The funding is distributed by the Federal government to help initiate or catalyze the process, but control remains with the local jurisdiction to determine the desired outcomes.
- The community's influence on the Brownfields process can include the community's master planning, zoning decisions that dictate outcome, stipulations of the community, and the determination of the extent of contamination and the appropriate level of cleanup.
- There is a need to reduce the perception that Brownfields are a Federal problem because of CERCLA liability.
- Brownfields are simply a particular type of real estate development. As people get more sophisticated about contamination assessment and cleanup, the fear of liability can be overcome.
- Don't think of Brownfields only in terms of their own context, but in the greater context of economic development.
- Brownfields sites can be conceptualized according to a matrix that characterizes two criteria: 1) the extent of contamination, and 2) the inherent redevelopment potential, or marketability of the site. The matrix establishes two polar extremes with high contamination sites in a bad market environment at one end, and marginally contaminated or low contamination, good market potential sites at the other end. The remaining boxes in the matrix represent varying levels of contamination combined with different degrees of marketability and represent approximately 80% of all of the sites that might be considered. Each box in the matrix has a different general strategy attached to it. The matrix, when plotted, forms an approximation to a bell curve.
- There are three categories of property: 1) sites that would be developed anyway because of some aspect or quality like a waterfront; 2) sites that, but for a concerted effort, would not normally be redeveloped (strategic sites), and 3) the remaining sites that have little or no prospect for development (95% of all sites).
- It is essential to understand the real estate market; to match the right property to the right development use, and to know what catalysts are needed to stimulate development of the project.
- There may be good reasons to invest in an individual property despite conditions of site contamination or other marketability considerations. A property may be important, not because of the quality of the property itself, but because it is centrally located or is part of another parcel that, when combined, collectively becomes important. It also may be important to the redevelopment of other neighboring parcels, or other parcels in the greater neighborhood.
- The EPA program is there to create the initiative; however, it is also necessary to let the local communities take the program lead and run with it through completion.

- Education of the public is the key to helping local government bodies understand that if the site is not on CERCLIS and doesn't pose an immediate removal problem, then EPA is not interested. The entire problem can be handled locally without EPA intervention.
- The Brownfields program represents an opportunity to expand the collaboration of the multiple, varied governmental agencies that are involved in urban redevelopment.
- The program affords the opportunity to level the development playing field between the urban center and the urban fringe.

1.4 Key Brownfields Program Elements and Objectives

- The goal is to minimize the Federal role and involvement in Brownfields cleanups. The objective is to keep Brownfields projects as local solutions.
- EPA's role is to demonstrate the environmental benefits of Brownfields.
- Government funds are there as the impetus, but continued support and control of the project is the responsibility of the city or the municipality.
- The goal is to shift the breakpoint from a reliance on public investment (or minimized funding) to a point where the free-market forces can take over.
- Credibility is a key issue. The Brownfields Pilot Programs need to create an immediate (less than 5 years) success to be noticed and to develop credence, but at the same time, the program requires a long-term plan (more than 5 years) in order to be fully successful.
- A key element is the perception or fear of contamination.
- The context of the site is a key factor and is specific to each site individually.
- Risk communication to the public is a key issue.
- Some examples of key technical elements of the Brownfields projects would include: the size of the property (large lots are required for manufacturing uses), the level of contamination present, and the determination of appropriate reuses of the site.
- A primary social concern is the retention of the existing character of the neighborhood (i.e. don't drive out the original residents).
- The community goal is typically to create jobs by bringing in new business that is environmentally sensitive (green companies) or at least regulatory compliant industries.

1.5 Brownfields Project Organization

- Projects depend heavily on the presence of a strong Working Group, Advisory Group, or Steering Committee. This allows all participants and stakeholders to be represented and sitting together under one structure (e.g. chamber of commerce, community groups, grassroots groups, banking organizations, state agencies, Federal Brownfields program, and city groups or local committees.
- The Brownfields program is a very grass-roots effort and is very dependent on the personalities of the people involved. The program requires the successful involvement of a number of people in the community to make the program work.
- Important stakeholder groups include: city officials, scientific and technical personnel, and someone to translate the scientific and technical results to the community groups.
- Local politicians and government bureaucrats need to define their roles with respect to the project and their constituents.
- Example: The Birmingham Pilot is unique in the way they tied the Brownfields Program together with other Federal/state/community assistance programs (i.e., HUD Empowerment Zones); under a single city department manager/coordinator; and minimized many of the bureaucratic problems that other projects have faced as a result of different city departments having responsibility for different economic aspects of the project.
- Example: The Prichard Pilot tied together superfund and health, and water issues as well as academics from the local area to build a unified project. The perspective here is to see that Brownfields are one element of a comprehensive puzzle for urban area revitalization.
- Example: The Charlotte Pilot is emphasizing the financial industry tie-in by putting together a number of national banks to create a sympathetic consortium of banks that understand the potential for development, Brownfields redevelopment issues, and the unique funding needs.
- Example: The Atlanta Pilot has had some success combining Empowerment Zones with the Brownfields Program. They are working to increase ties to other city programs.
- Example: The Chattanooga Brownfields effort has had some success with tie-ins to the business community and especially to the TVA.
- Example: The Knoxville Pilot has remained focused on just the downtown district itself. This has been a plus for the success of the project.
- Example: The Rhode Island Pilot master planned the downtown development of Providence.
- Example: The New Orleans Pilot is utilizing a community involvement model.

- Example: The Niagara Falls Pilot, one of the newest, has focused on the process of public awareness and public education.

1.6 Distinction Between Urban and Rural Brownfields

- Urban sites are much more connected and vulnerable to what happens in the surrounding region than are rural sites. They tend to be more fragile in terms of the influence of the surrounding context, even when the contamination is removed.
- The stability of the surrounding communities (neighborhoods) is not as guaranteed in urban areas. What may be there now could easily change into something undesirable at a later time. Rural areas tend to be more stable.
- Urban sites need a regional strategy for successful development - regional in the sense of looking at more than just the site itself. There is a need to consider the entire area or region around the site. Bridgeport for example, has been successful in attracting businesses back into the city because they are taking a regional, multi-site approach. The sites are viewed as interdependent. They are also dealing with small parcels; the idea of assembling small parcels gives the developer more acreage to deal with and makes the site more marketable.
- The two types of projects are completely different; all of the important elements are changed: 1) there is less public opposition to development in rural areas; 2) taxes are higher in the city; 3) the process to get development approved is subject to more requirements in the city as opposed to the suburban fringe, usually a much speedier process, and the rural "greenfield" represents the easiest and fastest of the three; 4) most cities have antiquated zoning restrictions; and 5) local governments are less willing to subsidize redevelopment in the center city, but will accept extensive local subsidy for new development on the fringe.
- The key to urban Brownfields is that urban businesses are generally not large and their needs are vastly different than suburban industries.
- Small, urban businesses generally do not have the resources to address contamination issues.
- Banks do not like to lend money to small businesses moving into potentially contaminated areas or particularly undesirable parts of the urban environment.
- Typically, improvements to inadequate or antiquated urban infrastructure are not subsidized while new infrastructure in rural or fringe areas can be subsidized as part of the total development.
- The nation is predominately urban, but there are some small communities that also represent good Brownfields candidates.
- The difference between the two is not really tied to the size (acreage) of the project, but is more related to the level of resources available at the local government level.
- For the most part, rural governments do not have the infrastructure that larger metropolitan governments have.

- State projects, such as Rhode Island and Maine, are set up in areas where the rural infrastructure is inadequate, or to take advantage of a state level capability that is not available in the smaller cities, such as marketing potential.

1.7 Brownfields Redevelopment Strategies

- The process starts with a well-defined problem; the important issues will develop from there.
- There should be an emphasis on development strategies based on interconnected greenspaces in the urban center and across larger urbanized areas.
- The process also needs to be focused on improved development in the suburban fringe as well as in the urban center.
- A primary concern is with the effect of land use and development patterns on environmental quality and land consumption.
- Open space development can be an inducement to other kinds of development. Open greenspace and parks are missing in the urban center; a park in the right location can enhance surrounding property values.
- Normally public taking is used as a last resort; cities do not want to take on the additional liability.
- Use of public taking could give the impression that getting involved with the program will result in a public taking and would tend to discourage owners from wanting to become involved.
- Use of public ownership methods such as taking (for tax arrears, addressing public health threats, and property consolidation), outright public purchase, or some joint public-private holding is a preferable strategy.
- Bridgeport, in a few instances, used a strategy that involved the owner demolishing the structure and conducting a cleanup, then transferring ownership to the city for \$1. This transfers the liability allowing the owner to remove a contaminated site from his inventory (normally an already depreciated site). Advantages accrue to both the owner and the redevelopment program.
- Subsidized development occurs in the suburban fringe but is absent from the center city. The older city structure is assumed to have an infrastructure advantage, but often, the center city infrastructure is not sufficient to accommodate modern construction (lot size, sewer hookups, telecommunications, etc.). Cities are often not as willing as suburbs to subsidize infrastructure.
- The public (or community) needs to be aware of the proposed future vision and the overall impact of the development plans.
- It is important to build exchanges with other cities (especially internationally).
- Infill development can be more sustainable than greenfield development because of improvements in transportation and transportation related impacts.

- There is a need to concentrate on developing more incentives and trade-offs to encourage Brownfields in-fill development (for example, create Clean Air Act credits for Brownfields in-fill development).
- Supplemental Environmental Projects (SEPs) are special agreements among EPA, DOJ and responsible parties to reduce non-compliance penalties by taking other "positive actions." These can be a mechanism to stimulate and fund Brownfield site assessments, but cannot be extended beyond the assessment phase. A good example of a SEP is the Sherwin-Williams agreement by which the fine to Sherwin-Williams was reduced by its commitment to pay for Brownfields environmental testing and cleanup of a former foundry site.
- The extensive construction of greenspace and community gardens can be important as interim uses development. One example is the Project for Public Spaces in New York City.
- At least half of the current Brownfields Pilot Projects have a waterfront element. This is considered an inherently valuable feature.

1.8 Incentives to Stimulate Emerging Technology

- The vast majority of sites are relatively small and are owned by small to medium sized businesses that do not have the resources necessary to characterize the sites and address the contamination. As a result, there is a push to seriously consider using field screening methods that are less costly and would allow businesses to get an idea of what is there so that they could make sound business decisions on how to proceed.
- It is important to try to find matches between the cleanup technology employed and the business uses proposed.

1.9 The New Urbanism Concept

- The New Urbanism incorporates the general belief that the built environment does not have to be unsustainable.
- There is a greater tolerance for new approaches to property development; the merging of environmental policies with spatial development policies is a key element.
- The primary question for development is: How do we reintegrate this piece of geography back into the society?

1.10 Strategies to Attract Business to the Urban Core

- It is a difficult process to identify and induce green businesses to come into Brownfields areas.
- Demographic change represents an opportunity to redevelop inner city neighborhoods. As the American population ages, the baby boomers get older, and their children grow up, there will be a tendency to want to move out of the suburbs which are less friendly to older people and less convenient or desirable. In the urban center, daily life services are closer and more accessible by foot. In New York City for example, there is less need for retirement homes - older people can live well into their later years and still function without assistance because necessary services are close at hand.

- Andreas Duany addresses the issue of what cities can learn from the suburban development experience that will help in developing new strategies. Some examples include the need to raise standards in the urban core - to reflect new social conditions found in the suburban fringe; the employment of modern management techniques; the recognition of changing cultural conditions or standards (i.e., lifestyle, convenience, transportation, recreation, etc.), and the need to emphasize a pedestrian orientation - the advantage the city has over the suburbs.
- One possibility is to consider trading clean air act credits among various industries.
- Michael Porter in the *Competitive Advantage of Center Cities* emphasizes attractions such as sports, amenities, arts, and education that are found in center cities.
- There are also funding opportunities available to cities that are not available to the suburbs such as Section 108 loan guarantees, ISTEA, CMAC, and the Community Reinvestment Act.
- Todd Zimmerman describes three categories of people moving into the center city: 1) the Risk Takers (young, new college graduates, the arts community, the gay community) who are the first to move into a decayed urban area; 2) the Risk Aware (more middle class and young urban professionals with middle class orientation) who follow-on as the second wave of in-migration; and 3) the Risk Averse - more settled, older Middle Class (dentists, doctors, lawyers, etc.) move in finally and the first group moves out. The marketing requirement is to find out what attracts these individuals and groups.
- Not all green businesses are especially aesthetic additions to the local community; for example, a recycling plant does create jobs, but it is not necessarily an attractive addition to a community.
- Everyone's preference is to locate a pristine company in the new development.

1.11 Approaches to International Exchange

- Multiple examples exist to contend with the opinion that the U.S. is too advanced to learn anything from foreign countries and that foreign approaches can be successfully transferred to U.S. Cities.
- Realistic policy interaction with other countries is possible and is especially useful for developing new ideas in areas such as labor retraining.
- The ICMA is preparing four case studies of European Projects including the Westergasfabriek in Amsterdam, Emscher Park outside Duisburg, Germany, the Toronto Waterfront Redevelopment, and the Groundwork Trust Project in Birmingham, UK.
- A key source of information is found in the work of E. Verhagen, especially on the Westergasfabriek.
- The most probable impetus for a more advanced development of these concepts in Europe is a greater and more immediate land use pressure that forced consideration of alternatives. This required the definition of a broader context and the creation of a holistic approach to reintegrate Brownfields properties into the community. The

European communities have been able to harmonize their industrial and spatial development policies to a greater extent than in the US (i.e. planning goals focused on environmental concerns and mixed use zoning to support transportation corridors and open "green" space). State structures, cultural environment, and regional planning also factor into this development.

- The "Best Practices" approach can be successfully translated from European Projects to the U.S. Some examples include: Cape Charles, VA which is applying best practices concepts learned from its experience with several foreign projects and has incorporated the eco-industrial park concept that was first developed as a part of the Westergasfabriek project; and Portland, OR which has developed a sense of place through harmonized land use management and social practices, and by integrating environmental concerns and land use policies into the community planning process as a whole.
- Some examples of potential international partnerships between cities include: Portland, OR and the German Emscher Park project, and the Toronto Waterfront and Baltimore Inner Harbor Projects.
- The most common theme throughout international development planning is interconnected greenspaces to protect riparian and other environmentally sensitive areas.
- Capital funding for many European projects comes from a kind of mini-superfund trust for site assessment and remediation administered by the individual States.

1.12 Community Awareness, Understanding of Health Risks, and Acceptance of Cleanup Options

- Many of the Pilot Projects have not yet reached the point of establishing cleanup standards.
- The community as a whole should be involved in cleanup decisions when they are made.
- In those cases where the city has not identified the high profile sites, a public advisory group (committee) is formed to develop screening criteria and identify the high priority attributes. The committee then reviews the candidate sites according to these criteria and selects those to be recommended as the highest priority.
- Some criteria that would be useful to prioritization include marketability, contamination, and proximity to other high profile sites.
- Familiarity is one important element. When people have lived next to a site for ten or twenty years, it tends to make the site seem less of a threat.
- With a Brownfields project, people automatically start considering the potential for jobs and health issues tend to become less important.
- The level of concern for health issues in a Brownfields Project is generally less than for superfund sites.

- It is important to tie the cleanup levels to proposed future land uses to overcome differences between stakeholder groups on the level of cleanup. Communities will sometimes opt for a less than perfect environmental outcome in trade for a more positive economic outcome.
- There is a need to demonstrate a commitment on the part of the city, State, or Tribe (these are the only entities that can apply for a Brownfields Grant) to clean up and then redevelop the site with environmentally responsive businesses that will not continue to contaminate the surrounding area.
- The local populations are apprehensive that once the original source of contamination has been removed, the redevelopment of the site may result in a new source of contamination.

1.13 Risk Factors and Indemnification

- The focus is on the redevelopment of contaminated land versus the requirement to cleanup to unrealistic levels. This requires the community to have greater risk acceptance levels based on an understanding of comparable risks.
- When the Phase I and Phase II assessments are completed, there is a need for someone to explain the assessment to the public at large; a need to explain what has been done. It is up to the city to translate the results to the business and the equity market communities.
- One critical requirement is that there must exist, within the stakeholder community, the capability to clearly and simply communicate risks to the public without raising undue hopes, expectations, or fears.
- Institutional controls may be required to address future (long-term) liability due to contamination. There is however, a question of the next developer or owner recognizing the prior containment strategy, and having sufficient funds to address the contamination; otherwise it may simply be ignored. Any strategy must provide for permanent disclosure.
- There are currently seven different policy initiatives to deal with insurance. The question is what types of indemnification does the municipality require, or offer. There will always be some risk unless you move to a permanent deed/zoning strategy.

1.14 Community Involvement

- The community cannot be allowed to be the sole driver in the Brownfields process. A high community priority site may not necessarily be a highly marketable development priority.
- It is important to help the community understand what the developers needs may be. Likewise, developers vary in their degree of sensitivity to community attitudes and desires; some recognize the benefit of early community involvement to prevent added costs or delays. Such costs and delays are usually the result of late community involvement that typically results in community opposition to the project.
- The preparation of an application for a Brownfields Pilot grant forces groups within the community to come together in order to address the requirements of the grant application and write the grant itself.

- Community pride is definitely a motivator for local community group involvement.
- The personality and commitment of local people is reflected in a focus on the desired outcome, as opposed to simple process oriented enumeration.
- Participation by groups with agenda other than redevelopment can place too many requirements or expectations on the process - becoming an impediment.
- Local partnerships are critical for effective communication, community endorsement, and the location and identification of resources.
- It is important to make certain that realistic expectations occur from the outset of the project.
- Some developers who have had tremendous success working with communities, seem to want community participation, and will consider the needs of the community. They recognize that there is an advantage to becoming a part of the local community.
- One of the qualifying criteria for a Brownfields program grant is that the project demonstrates community support and participation. This means that Brownfields Pilots usually have serious community involvement as a part of their plan. We would not expect to find a lot of community opposition.
- If the municipal government leaders see that the proposed plan is the result of some communication with and involvement of the local community then, they are more inclined to support it. Otherwise, it simply gets lost in the bureaucracy.
- It is necessary for the public to express its support in order to stimulate local government officials to further the plans and interests of the project.
- The local politician is responding to a need to get reelected. He is more likely to address the immediate concerns of local business (such as tearing down a building or building a parking lot next door) than to respond to a Brownfields Master Plan that has no public pressure behind it with proposed results that will not be evident for several years.

1.15 Environmental Justice

- The concern for environmental justice has spurred the formation of public groups that have provided input to the Brownfields project planning process.
- The basic idea is that communities should have a say in what is to be done in their area and that communities should be involved before any decisions are made.
- The most serious problem is convincing investors and developers that the environmental justice community has a legitimate claim to being included in the development project.

- Attention to environmental justice issues is seen as a hindrance to the development process.
- EPA has established the National Environmental Justice Advisory Council to assist the States, regions, and local projects with the important environmental justice questions.
- A primary concern is that Brownfields is viewed by the community as a “Big Government” or “Chamber of Commerce” move to create new business without regard to the specific needs or concerns of the local community.
- There is a concern that a new company will move in replacing a previous company that abandoned the Brownfields, but there will be no change to the quality of life for the residents of the immediate community.
- Gentrification may not be of as much concern as everyone makes it. We should be more concerned with the rapid loss of middle class population in urban areas. It was the middle class that was there in the first place, when the urban core deteriorated and the lower income neighborhoods replaced them. The city needs the surplus income of the middle class to support other enterprises in the central city. The effort should be to establish mixed use, mixed income developments that will encourage the middle class back into the city and provide for lower income residents already there.

1.16 Barriers to Brownfields Development

- The perceived or real threat of CERCLA liability represents an important barrier to Brownfields development.
- A lack of awareness (on the part of municipality and private property owners) of the process involved in determining if a site is on CERCLIS.
- For TSD facilities, the inability to segregate portions of a site for sale, lease, or transfer for redevelopment.
- Racial conflict, especially over neighborhood gentrification is an important factor.
- The absence of relevant Brownfields legislation is a major barrier.
- The absence of innocent landowner and prospective purchaser protections are a major problem for Brownfields development.
- The absence of statutory liability release poses the greatest barrier to Brownfields redevelopment.
- A lack of legislation is a major barrier to the development of the revolving loan fund.

1.17 Legislative and Regulatory Issues

- Unknowning landowner defense legislation is currently being drafted to provide innocent landowner liability waivers or hold harmless covenants that will be important to Brownfields redevelopment.

- EPA is just beginning to look at contiguous landowner protection in the context of Brownfields redevelopment. The key is defining innocent landholder liability and contiguous (neighbor next door) issues.
- The CERCLA (Superfund) enforcement perspective involves a two-tiered approach consisting of: privately funded assessments and cleanup; and Federally funded cleanup with subsequent cost recovery action.
- Congress has not really dealt with the indemnification issue directly.
- The current CERCLA liability scheme is not going to change (i.e., the owner is liable).
- EPA has interpreted CERCLA as allowing for the reduction of a site into operable units that can be addressed separately. As cleanup of operable units is completed, the size of the site can be reduced. This is not possible under RCRA.
- The Superfund program is being adapted to address Brownfields by allowing flexibility in the areas of “total enforcement” and “cost recovery.”
- New tools available to the Brownfields program include Comfort/Status Letters and Prospective Purchaser Agreements (PPAs). EPA Comfort Letters can serve private parties better than State Voluntary Compliance Agreements.
- By definition, RCRA only applies to operating or closed TSD facilities, and therefore most Brownfields would not be subject to RCRA requirements. Exceptions would involve “clean closed” sites, and Generator and Transporter sites that are not “clean closed” and have minor contamination.
- The most common RCRA problem at Brownfields sites is leaking underground storage tanks (LUSTs). These are best addressed at Generator/Transporter sites through State Voluntary Compliance Programs since States typically enforce waste oil.
- Forty States currently have Voluntary Compliance/Cleanup Programs (VCPs). Minnesota is believed to have the most comprehensive and progressive of these programs. The VCPs offer flexible covenants for lenders.
- An important aspect is the consideration of what aspects of Federal policy are actually contributing to the formation of Brownfields or increasing urban sprawl. There are several ongoing efforts being directed at the identification of these policy or regulatory issues. One example is that the cost of permitting rises in non-attainment areas, thus greenfield areas (more likely to be in attainment areas) are less costly and more attractive to developers. Another illustration can be found in the use of Federal dollars to fund highways in urban areas. This tends to facilitate commuting from longer distances and increases sprawl development in the suburbs.

1.18 Brownfields Success Criteria

- Because every Pilot has its own objective and strategy, it is difficult to establish a single measure of success. Concrete measures, such as the number of sites turned around, the number of new jobs created, the number of public groups involved, or the extent of public acceptance are usually preferred.

- The most important factor is the project manager for the municipality. There is a need for a strong manager who can move the process along.
- The municipality needs a good understanding of what it is going to do, what barriers may exist, what resources are required to accomplish the plan, and what resources it has available, especially funding.
- A comprehensive plan is essential including a strategy for how the property will be used, how to market it, and how to identify prospective new owners.
- The project is likely to fail unless all necessary components, especially funding, are anticipated and addressed early in the process.
- Ultimately, it comes down to finding the money and involving the community.
- Successful communities promote mixed-use development, pedestrian oriented development, the concept of the 24-hour city, and are able to tap into emerging fields in Real Estate.
- The use of an advisory council or advisory board, or a Brownfields working group that represents the community of interest associated with a project is thought to be highly correlated with the success of a project.
- For success, there must be local motivation, technical capacity, and environmental and financial awareness.
- Strong marketing skills and strategies are needed to develop the rationale for why it's important to a business or industry to move back into the urban center.
- The developers who are brought in must not have or propose businesses that will contribute further to the environmental or socioeconomic problems of community.
- The role of risk communication is critical to the success of the Brownfields project as it relates to the participation and acceptance of the public of the proposed plan.
- Local project leaders need to address the community leaders and discuss the results of their efforts and the proposed plan.
- The community often has larger expectations for Brownfield project outcomes. These are driven by concerns with high levels of unemployment, aesthetics, quality of life issues, crime, and safety. These often reflect the community's differing view of "environment."
- The community needs to understand the reality of the situation in order to avoid developing false hopes and unrealistic expectations for the project outcomes.
- Realistic expectations are a key to making the whole process work.

- There is a need to get the private funding right up front and not wait or depend on public funds and grants.
- The Federal funding of a Pilot is seen by the development and investment communities as the good housekeeping seal of approval; it demonstrates the “value” of a given project. Other sources of support may become available to a project because it has been designated as a Brownfields Pilot.

1.19 Weaknesses in Brownfields Projects - Failure Indicators

- The greatest weakness in the existing program, from a Federal perspective, is that many people feel Brownfields is a superfund program; and the superfund program people feel that it is just another initiative that gets in the way. It is important to see Brownfields as a comprehensive, multi-media, compliance development program and not just as a superfund cleanup program.
- A serious drawback is the prevalence of limited project resources, unfunded government mandates, and differing agendas among the various agencies and stakeholder groups. The \$200,000 grant sounds like a lot of money, but this is not sufficient to actually accomplish the program.
- The Brownfields effort requires time to develop and this contradicts the need to achieve a quick success that will get public and developer attention. There is a reason that Brownfields have become Brownfields and this process has taken place over a long period of time.
- Political pressures can cause a tendency to go for the immediate advantages of a quick fix rather than to a long-term, integrated plan.
- The programs should be based on a five-year plan, this allows time to develop the property and determine if there is any real interest. This interest is developed over a longer period of time, not in the short-term.
- The potential benefits (i.e., CAA credits, CMAC environmental enhancements, etc.) are not really obvious in Brownfields development. The inability to identify the environmental benefits of Brownfields redevelopment could be the Achilles heal of EPA’s Brownfields Initiative.
- The project is spending a fair amount of money and not meeting milestones; no productive outcomes.
- Public participation starts falling away.
- In one example, the project fell eight months behind schedule and now the business community is beginning to have questions. The EPA regional office is getting calls from the financial supporters and private development community looking for reassurance that the project will proceed before they are willing to put any additional money into the project.
- A number of cites have become overly focused on the EPA Brownfields Pilot Program and continue to resubmit applications. Some of these municipalities have taken no action without the EPA grant, even though they have already identified Brownfields properties. Communities must address Brownfields problems whether or not they receive an EPA grant.

- Pilots don't adequately establish relationships between local project leaders and EPA. This represents a new relationship for EPA - EPA previously dealt with the state level.
- A number of programs use outside consultants who are not familiar with the community and, using a standard pre-written format, fail to capture the necessary qualities and address the criteria required for a successful program.
- Unrealistic expectations among community groups and local politicians.
- Projects often miss a lot of available money through failure to look for other funding sources such as real estate development loans or accessible transportation money.
- There is a need to attract outside investors in groups to assure the continued success of the project.
- One major source of weakness is that projects fail to understand and apply basic real estate fundamentals.
- The states do not have the money or the resources to hand-hold the local efforts or to create new incentives; so, the local project is faced with abandoned properties and pressures for a quick turn-around. The states need to provide support through broad economic development programs, tax incentives, etc.
- For the local community, the problems are centered around developing ways to sustain the development process, once it has been started.
- There is apprehension that no matter what the history of the site, the site assessment and cleanup will result in greater problems and costs than developers are prepared for; and therefore developers tend to shy away from anything other than new greenfield development.
- Potential developers assume that no matter what the site history, there could potentially be a problem. The fear is that something will spring up and cause problems at some later time, even if the property is found to be minimally contaminated.
- Especially in the southeast US, the perception of contamination and public safety concerns pose the greatest barrier to any kind of development.
- The general position of potential developers is that it is better not to address this particular property - because if I do it's going to cost me big time.

2. Summary of Non-EPA Sources

Number of respondents: 5

2.1 Definition of Sustainability (Sustainable Development)

- Sustainability is linked to the culture and history of the community. Sustainable development must be based on community involvement. It should reflect the values and principles of what the community wants - at all levels. The tie between the community environment and sustainable development helps the project “stand the test of time.”
- A sustainable community or a livable community obviously requires that you provide jobs, education, security, and a place where people can get services. There is also a need to provide recreational resources, including historical, cultural and natural resources; therefore greenspace plays a major role. These are necessary factors to draw people to the community and make it a place where people want to live.
- There are two keys to sustainability: 1) a good environmental baseline survey (EBS), and 2) the buy-in of the regulatory agencies and the local community.
- Standard economics is unable to value and portray the sustainable community because economic models are overly driven by cost measurements. Sustainability must include social, cultural, aesthetic, ecological, and other values.
- A small informal hands-on project may not seem like much, but it creates a social structure, vision, and commitment from which sustainable communities can evolve. For example, most urban areas have a run-off problem - the more greenspaces, the less runoff - so clearing and planting vacant lots, even though a very small project, is actually doing something to contribute to longer-term sustainability.
- It is necessary to accept that there are groups within the community that will understand that they have to do something - but then do something small (e.g. use greenspace as an interim measure). If you get some people who want to do something, however small, then you have, in effect, created a grass roots movement and that can be sustainable.
- A sustainable project depends on the degree to which Brownfields is integrated with other issues to affect the sustainability of the community on a broader basis. Some communities are sophisticated enough to do this – they key in on a critical mass of intelligent people, worklife issues, greenspace, job creation and transportation.
- The perspective is that in any sort of community planning process, careful consideration should be given to the range of resources that exist in the community, and that protection and accessibility are important to gaining the public's understanding and appreciation of these resources, in order to protect, preserve or restore them for future generations.
- The definition of sustainability will vary from community to community.
- Too much emphasis on sustainability as a concept or goal creates problems because no one actually understands sustainability or how to achieve it.
- The key is to create jobs, re-train workforce, prevent crime, provide good housing, and attract companies that comply with environmental laws and eliminate pollution.

- The question is: Is it sustainable if you just focus on jobs? A satisfactory quality of life depends on an ecological component being there. Quality of life includes not misusing the resources and using them in a way that preserves and protects them.
- A part of the definition of sustainability includes a satisfactory quality of life (both living and working life).
- A sustainable community should be well integrated with nature. Ecological factors also have benefits for economics, property values, aesthetics, etc.
- Energy use is one tool for measuring sustainability. It is easy to measure the effect on the environment. This could be calculated either for the project or the community level. A number of State energy offices have been very active in sustainability efforts.
- It's not necessary to describe or understand sustainability in order to do those things that contribute to it.
- It is important to recognize that things can adapt or change over time. Consider how things were made and what happens to them as the community evolves. There is a need to think about or address the project from a life cycle analysis perspective.
- From a local standpoint, sustainability is whatever is "doable".
- Sustainability needs to involve youth in the process in order to begin to ingrain sustainability principles at an early stage.

2.2 Sustainability and Self-sustainability

- The important question is not if the development is sustainable; but can the community sustain the development? For example, a former blue-collar town that has lost both industry and jobs now has a bright new recreational development. However, the community may not have the income to support this activity over the long term.
- Sustainability should be considered as a process as opposed to an outcome. The Burlington, VT project is one example of sustainability being addressed as a process.
- Sustainability can cover the full spectrum of projects all the way to the completely self-contained.
- Self-sustainability cannot be forced at the project level because it could turn off a lot of communities and pose an insurmountable barrier to redevelopment.
- It is surprising what can be done toward establishing sustainability at the project level. Eco-industrial parks appear to be working as a concept.

2.3 Conceptualization of the Brownfields Initiative

- We have a tremendous opportunity to correct development problems that have been created over the last 200 years and the opportunity was unanticipated. Brownfields are really a consequence of CERCLA legislation. Now, as a result of this, we are asking fundamental questions about the way development itself takes place.
- Brownfields is a messy process. It is not really a straight-line process, but describing it as a linear project would probably be only about 70% correct.
- Each Brownfields project is unique. Every new factor - different land, ecology, business community, etc., changes the number or composition of stakeholder groups.
- Anytime there are more than two stakeholders involved, the process becomes an iterative one. Whatever the development vision, it is not always shared by all players.
- Brownfields are actually an effort to really work in economically depressed and under-served areas where there has been a lack of economic capacity. The effort is to have the Federal Government work with these communities to rebuild economic vitality. The objective is to address a wide variety of community services.
- Every Brownfields project is essentially a real estate deal. Somehow this has to be brought forward to the attention of municipal and project people.
- By focusing on the Brownfields issue, you are dealing with only a small part of the problem of inner city development.
- Congress has essentially reached the maximum of its funding of community grant programs. Now, communities look to programs like Brownfields to get funding. This is primarily a political issue. The City Council and Mayor's approach is that if Brownfields will get us money, then it's a Brownfields site. Communities will call a site a Brownfields site if that is what will stimulate attention and provide funding. They will then use these funds for other problems that are more pressing.
- Distressed communities are more likely to identify Brownfields sites within the community in order to obtain funding.
- Non-distressed communities may tend to feel that they have nothing to gain by identifying Brownfields in their community. There is an unpleasant stigma associated with Brownfields - it becomes a symbol of decline. Successful communities tend not to want this negative connotation.
- Brownfields are a contributing factor, but are not really a dominant factor in impeding development. A number of other conditions are more decisive including economic decline, changes in living patterns, increased poverty, crime, drugs, low market potential for reuse of the properties, etc. These become higher priorities.

- There is a complaint that environmental regulation has a chilling effect on development by labeling a property and through concerns over site assessment and cleanup costs, liability, third-party risk, etc. However, in a HUD study of 51 different projects, the finding was that environmental issues - all else being equal - were not a decisive factor in the creation of Brownfields or as an impediment to cleanup.

2.4 Key Brownfields Program Elements and Objectives

- There is a need to take each Pilot and find the transferable elements that are a part of it. Then, combine those transferable elements together to create a guide for other communities to follow, especially small communities.
- The goal is for the Brownfields process to plant the seeds for long-term growth of the community and an improved quality of life.
- There is a great deal of variation in the way communities do economic development. Not all communities do economic development planning and marketing, or do that well at it if they do it.
- New York City is an example of a community that does not specifically do economic development programs - they don't really need to.
- It's okay to think small as long as enough people do it
- Putting a Brownfield back into active use may mean putting something green on it - it is not always necessary to construct something.
- Regional equity or the idea that development in one place does not create new Brownfields elsewhere is a concern. A number of the Smart Growth Models address this issue. Montgomery County, MD model may be useful in terms of land, farm preservation, and transferable development rights. Minneapolis-St. Paul uses a regional approach to development (especially transportation and tax structure). Portland, OR employs growth boundaries as well as local ordinances and a zoning plan.

2.5 Role of Federal Programs in Redevelopment

- Federal programs need to be responsive, supportive and adaptive to local community needs. Programs should be flexible and responsive.
- The Federal Government cannot make decisions on what local community's value. It cannot tell local communities what is best for them.
- Federal agencies can assist with leveraging and consensus building, as well as education and public outreach to build awareness.

2.6 Agency Approach to Brownfields – Department of Defense

- The Department of Defense (DOD) role in Brownfields redevelopment is limited. Its primary activity is through Corps of Engineers public works support to communities. The Corps of Engineers is not an economic development agency.
- Existing Corps of Engineers development projects were severely lacking in environmental focus. The major emphasis seemed to be entirely on brick and mortar activity. The Corps found it necessary to include an ecological component.
- The ecological component gave the Corps a part to play and made use of some of the authorities that it had developed over the past years.

2.7 Agency Approach to Brownfields – Department of Energy

- The Department of Energy's (DOE) primary activities with respect to Brownfields redevelopment are in the areas of environmental management and the transfer of technology.
- The Center of Excellence for Sustainable Development is now a support office within the Office for Energy Efficiency (OEE). The function of this organization is to develop technical information tools and make them available to the general public.
- Brownfields are of interest to DOE because they generally already have infrastructure in place that creates energy efficiency requirements (e.g. existing roads, traffic congestion, reduced vehicular mileage, building efficiency, etc.).
- DOE is no longer involved in FUSRAP sites. These have been turned over to the Corps of Engineers.
- DOE's present concerns are with the environmental management of its big sites such as the Idaho site - about the same size as the state of Rhode Island - Hanford, and Savannah River. The Oak Ridge site has been doing some very positive things with economic redevelopment.

2.8 Agency Approach to Brownfields – Department of Interior

- The primary emphasis of the NPS is to protect natural/cultural resources.
- Practically all NPS programs are driven by grass roots action, or requests for assistance from another agency.
- The general approach is to go into a community and work with local organizations on a short-term basis (usually one or two year's duration). The purpose is to build a vision of resources and resource use, help develop a focused implementation strategy, and provide short-term technical assistance.
- The current NPS role or participation on the Brownfields Task Force is limited with no foreseeable potential for new roles. The primary NPS contributions to the Brownfields effort are: 1) it provides either funding or technical assistance to supplement committees (through local agencies), other partners, public agencies, non-profits, or

community groups which have limited resources; and 2) it participates in two specific Brownfields Pilots in Lawrence, MA and Providence, RI.

- In contrast to the Brownfields program that is a much more top-down oriented process, the Park Service approach is based more on grass roots organization - driven by the local partnerships in the communities. NPS is usually involved with trail organizations, local public agencies, watershed groups or the friends of a river or resource - non-profit groups trying to get started. The working coalition may also include a private firm or developer.
- Although there is an overlap between Brownfields and NPS programs; Brownfields is perceived as one more part of an overall community enhancement effort. The important element for Park Service programs is that the community feels that there is an important resource that they want to protect or develop.
- The Rivers and Trails Program is the primary NPS program. It provides assistance in the protection, conservation and re-creation of natural resources. The focus is on trails and greenways, rail corridor transformation, waterfronts, cleanup of riverfront parks, and unique national or cultural resources. The basic procedure is to assess resources, identify alternatives, get other stakeholders involved, then determine how to proceed.

2.9 Agency Approach to Brownfields – General Services Administration

- The General Services Administration (GSA) role in the Brownfields partnership is primarily related to the areas of community planning, assessment and cleanup, and redevelopment support. The agency does not do much with sustainable reuse issues.
- The basic GSA approach was to review other major programs and their involvement in urban development. Areas where other development programs were already operating were identified.
- The agency targeted those areas where other actions were already taking place. The agency did not want to go into an area where there was no other activity and attempt to start from scratch.
- GSA only addresses Federal properties; it is not involved with any privately held or local municipal property.
- GSA identified 16 cities for its participation in the first round and an additional 18 cities in the second round. An inventory of approximately 1,000 Federally owned properties was carried out in those cities. Meetings were held to determine which Federal sites were of interest to the communities.
- Federal property contributes to Brownfields in two ways: 1) underutilized sites can be transferred and put back onto tax roles; and 2) the property can become a part of nearby commercial redevelopment.
- GSA takes a proactive approach by going to the municipal government and asking if they want a property. The attempt is to link the agency to the city. Typically this begins by talking to cities about abandoned properties because they have the power to acquire the property.

2.10 Agency Approach to Brownfields – Housing and Urban Development

- The primary role of Housing and Urban Development (HUD) is to address housing and community development issues. In this context, environmental issues are obstacles or barriers that communities have to address.
- HUD is not a regulatory agency and therefore its approach is different from the EPA's. HUD's role is to provide resources to communities - primarily money, information tools, etc. - and to set guidelines and frameworks for the expenditures. Its support is primarily in the form of Special Grants (i.e., Economic Development Initiative Grants) that are based on a more regional approach, and Basic Community Development Block Grants targeted to improve low or moderate-income facilities in cities with populations of 50,000 or more. Communities have flexibility as to how they are going to expend the funds, but communities generally do not like to spend block grant money for cleanup.
- Brownfields issues are addressed in the context of communities trying to revitalize. Communities are not interested in Brownfields per se - they are interested in development. Brownfields have increasingly become an issue that has to be faced as another step along the way to development.
- The concern is how to promote community revitalization - what can the Department do to help revitalize Brownfields.
- Another development area is the Comprehensive Planning Program. This emphasis on area-wide planning is concerned with placing subsidized housing in the suburbs where new jobs are - making people more "portable." It encourages "movement to opportunity" or movement of inner city populations to the suburbs. This promotes desegregation and moves poor or economically distressed populations to the suburbs where new jobs are located. Here they can take advantage of suburban amenities (i.e., schools, social, shops, etc.).

2.11 Brownfields Project Organization

- The Groundwork Trust represents a potential model of community non-profit control that might contribute to the sustainable development of Brownfields. The Groundwork Trust organization was originally developed in Great Britain and transferred here. Model organizations are designed to bring the point of coordination for local environmental work to the community itself. The efforts typically focus on creating or improving greenspace (e.g., tree planting, wetlands restoration, and conservation projects).

2.12 Brownfields Redevelopment Strategies

- Community development values and desires should be determined on a case-by-case basis. For example in Los Angeles the priorities are driven by transportation issues and needs where in Chicago, the priority is on housing issues/needs.
- Rural communities need a replicable model to follow in order to get started.
- The current focus of Brownfields projects appears to be on inventory; but where can you go from there? There is a need to develop criteria to identify and select Brownfields properties that can be made financially attractive.

- It's the local municipalities' responsibility to control (via effective public outreach) public information and opinions about properties in order to prevent the creation of unrealistic or divergent expectations for the parcel.
- The Brownfields project requires three elements: the right incentives (tax breaks, low interest loans, grants, and others); the right property; and the right use.
- Waterfront sites are a hot item. They make really good Brownfields redevelopment sites. People are changing their idea of what a waterfront is and transforming older areas from port and warehouse uses to recreational areas.
- There is a danger in replicating successful models where you can get too much of the same thing (i.e., everyone develops eco-parks or convention centers or stadiums and soon everyone competes against each other and can no longer support the development). The question should be: Will the market support extensive waterfront development in every city that has a river?
- Program planning or community based planning depends on the requirements of the local community and the related issues.
- There is a need to focus on all costs associated with redevelopment - acquisition, assembly, infrastructure development, etc. - in addition to any kinds of contamination. The actual cost of cleanup and potential liability are a very small part of the development cost.
- Economic analysis primarily uses profitability and cost-benefit analysis. But incremental cost analysis may be a better way of determining the pure cost. This may be the better way to characterize Brownfields. This approach provides a relative comparison.

2.13 Incentives to Stimulate Emerging Technology

- One of the most profound new ideas, in terms of creating new possibilities, is the integration of natural processes into the actual infrastructure of the community.
- Phyto-remediation is a low cost alternative and it also increases the property value when you are planting trees, green areas, etc. This is probably the most important technology for Brownfields redevelopment.
- There are new site screening and characterization technologies that are fast and cost effective. These are especially important for small sites and communities that cannot afford traditional methods.

2.14 Strategies to Attract Financing

- The need to attract financing to the inner city is important. Chemical Bank does not want to end up foreclosing on a Brownfield, but would much rather have a nice suburban greenfield with which to deal.
- GSA has received several calls from banks and mutual funds trying to identify properties for investment. Other investors are also looking to acquire contaminated land in large quantities.

- Example: the Prichard, AL Pilot focused its initial efforts on agencies with money to fund grants. A number of agencies were targeted and these formed the funding basis for the project.
- A potential source of funding exists through Intermodal Surface Transportation Efficiency Act (ISTEA) legislation (e.g., Environmental Enhancement Loans). This can be a source of funding for trails and greenways projects through Federal highway money.

2.15 Strategies to Attract Business to the Urban Core

- To attract a developer back to the urban area, you need to emphasize what the positive characteristics of developing in this location are (e.g., taxes, access, finances, infrastructure).

2.16 Federal Property Transfer

- All Federal Property is deeded to the United States Government. There are 31 agencies designated to hold the property and act as owner with custodial and accountability responsibilities. GSA is the only source of authority for the disposal of property.
- Some agencies have disposal authority for some types of property (as a delegation of authority from GSA). For example, the military can dispose of BRAC sites directly, but this is done under GSA authority.
- Federal agencies are required to report assets (properties) that are no longer needed. GSA uses a three step, systematic "waterfall" approach to disposal:
 - A determination must be made if the property can be used by another Federal Agency. This covers about 5% of all re-deployed property. Otherwise, the property is surplus.
 - Property declared surplus to the Federal government is offered for sale to State or municipal governments - negotiations are based on the fair market value.
 - If there is no State or municipal interest, the property can go to a public sale.
- For any transfer or sale outside the Federal government, GSA is required to get fair market value. Exceptions to the fair market price rule (including discounts of up to 100%) can be made for "socioeconomic programs" such as parks and recreation areas, education, health, prisons or wildlife uses by the States or municipalities, or to wrap into a larger community development project.
- Buying Federal properties is like having an insurance clause for contamination liability because the government must return and cleanup the property if new contamination is discovered.
- CERCLA legislation describes requirements for the transfer of Federal property. In 1992, changes were added to require that property to be re-deployed be surveyed and that clean parcels be verified so that they can be immediately disposed.

- An additional change to CERCLA provides authority for the early transfer of property. This allows the Government to defer remediation until after the property is transferred and also frees the Government from the absolute requirement to pay for the cleanup. The Government can discount the fair market value of the property for the cost of any cleanup; the new owner pays for cleanup, the cost of which is deducted from the sale price. Early transfer authority does not absolve the agency from responsibility for the clean up or any subsequent liability.
- Relocation is another strategy. The agency can also integrate or consolidate to free up property, especially in high cost/property value areas. Agencies sitting on high dollar real estate can sometimes sell it and pay for the construction of new facilities in lower value areas. This frees up desirable land for commercial development.

2.17 Risk Factors and Indemnification

- Need to consider how environmental insurance might be used as a tool to help communities address pollution problems and municipal liability.
- There is a range of options for determining cleanup levels. Cleanup levels should be risk-based. We have to look at both the human ecological risks that are involved with the project and at the natural ecological risks - we may have clean sites, but a dead environment.

2.18 Community Involvement

- The developer is the key. The developer tends to involve only those community participants it needs to expedite the project.

2.19 Environmental Justice

- Environmental justice is a very recent consideration in public programs; it was not a part of the process in the past. Now the tendency is to move away from past practice and not to build public housing at or near Superfund sites.
- Environmental justice has helped focus a lot of Federal money on inner city areas that “also happen to have contamination problems.”
- Aside from lead paint contamination, cities otherwise report anecdotally that contamination is not a serious problem for development, and that it is not likely to become one.

2.20 Barriers to Brownfields Development

- Small community politics can be an important impediment to the redevelopment effort.
- Sometimes it is difficult to get the consensus of the private property holders adjacent to a project. For example, a recent greenspace project met with opposition from adjacent landowners who objected to increased use by the public. Residents also objected to the loss of opportunity to purchase the land and expressed concern that this was

the beginning of a National Park or Federal area. Local businesses became concerned over withdrawal of the land from productive use.

- Environmental contamination is not necessarily an impediment to development. The cost of remediating PCBs, lead contamination, new construction, local poverty issues, high crime, etc., are actually what halts development. Therefore, environmental costs are just one of a number of factors to be dealt with in the process of adaptive reuse.
- The biggest problem is shortsighted thinking and a lack of expanded vision, limited focus, and an over emphasis on job creation. Looking at it only from a short-term, monetary gain standpoint is not beneficial.
- People who can define and move the vision forward cannot always be found.
- The Federal regulatory environment encourages sprawl and impedes redevelopment. There is a need to identify which Federal regulations may actually be encouraging sprawl. The CEQ is preparing a preliminary draft document on this issue.
- There is a finding that air quality regulations are driving cities toward sprawl. Increased sprawl is a possible mechanism for reaching attainment through dilution.

2.21 Brownfields Success Criteria

- The success criteria are really specific to the individual community or city.
- The best possibility for success is in those communities where there is a strong city economic development department as opposed to those communities that are limited only to a planning or other similar department. The city's economic development people are more adept at defining where the project is going and where the funding will come from, as well as the types of development the community will support.
- It is important for the community/municipality to really identify and understand its needs.
- There should be a group, or organization, that will take responsibility for the resource and process; and that will be around to assure that the process will continue beyond the immediate future. Essentially, a non-profit organization that will be there to assure the long-term future of the project.
- The presence of sufficient stakeholders (including indigenous residents) who are appropriate to the project and who can support a long-term commitment because they really care about the project is important.
- Successful projects are usually tied to a strong market, however, there is no one particular model of success.
- Simple success means that the effort promotes sustainable development or sustainable communities; the development makes sense - uses sustainable criteria.
- A key question to determine success is: Would you want to live and work here?

- The project has done something that reduces overall demand on resources, energy or transportation.
- The project has avoided doing anything that will cause another Brownfields 30 years from now.
- An important question is: If I build this, will people want to live here as well as work here?

2.22 Weaknesses in Brownfields Projects - Failure Indicators

- Community development is often hampered by a ground zero start. Typically there are no resources or networks already in place.
- Failure occurs more often when plans are done by a consultant or a group that has no commitment to see the project through. A successful plan needs a component of residents to become involved and make it happen.
- There is a lack of understanding and appreciation for what a sustainable community might look like.

Appendix F - Summary of On-Site Interviews

1. Brownfields Economic Redevelopment Initiative – Dudley St. Neighborhood Redevelopment Boston, MA

Site visit: January 28 - January 30, 1998

1.1 Background

The primary focus of the project is the Dudley Street Neighborhood. There are over 1,300 vacant lots in the neighborhood, accounting for 9% of the State's listed contaminated sites. The project's objective is to address Brownfields as part of a multi-dimensional revitalization strategy for the Dudley Street neighborhood. The Pilot Project Grant was awarded in September of 1995.

The Dudley Street corridor is a major urban thoroughfare running through the Roxbury section of the city to Dorchester. Roxbury and Dorchester have borne the brunt of Brownfields creation during the past 20 years. The Boston Brownfields Pilot focus is on one small area of Roxbury around Dudley Square. The overall vision for this redevelopment was the creation of a "Dudley Urban Village" – a self-sustainable community within the city. The Roxbury area was recently rezoned to segregate residential clusters, commercial/industrial clusters, etc. Previously, industry was located right on top of the residential community.

The city of Boston perceived the Brownfields effort as an environmental rather than an economic development problem and placed the Brownfields coordinator position in the Environment Department. The project has had significant accomplishments with respect to community involvement and is supported by community residents who have been given an opportunity to participate in the decision making process. However, problems with respect to the overall project management and coordination, the metropolitan government and political structure, and the response of property owners have impeded progress and limited the achievement of project goals.

The population of the city of Boston is 574,283 (1990 census), with a minority population of about 236,000 and 18.7% of the population living at or below the poverty level.

1.2 Project Contacts:

John Podgurski, Region 1 Brownfields Coordinator,
Carol Tucker, Brownfields Project Manager, USEPA, Region 1
Barbara Landau, Brownfields Coordinator, MA Dept of Environmental Protection
Jacqueline Ritchie, Brownfields Coordinator, City of Boston, the Environment Department
Russ Lopez, Director, Environmental Diversity Forum
William A. Shutkin, Co-Director, Alternatives for Community and Environment (ACE)
Frank Sapoda, Deputy Director of the Dudley Street Neighborhood Initiative
Dudley Street Neighborhood Initiative - Membership

1.3 Summary of Major Themes

1.3.1 Conception of Sustainability

- Although EPA is concentrating on sustainability and wants municipalities to factor in sustainability early in the Brownfields process, it has not been a high priority in the regional Pilots to date. The focus has been more on encouraging sustainable, closed loop type of industries.
- At the project-level, the goal of sustainability is not so much on the effort to keep the program going, but to have the individual project sites ready and in position to be redeveloped once the site assessments are completed.
- Sustainability can also be related to what communities may want to do. A project is sustainable if it satisfies goals and criteria that communities may define for themselves.

1.3.2 Conception of the Brownfields Process

- Brownfields is not so much a process but a "tool kit" from which you select the parts you want or need. The Pilot Projects are simply a tool for communities to leverage resources with other grant programs.
- The program should be a "forum" for property owners to get answers and input on how to deal with contaminated land. But, Brownfields should not be a tool for communities to push owners into redeveloping land.

1.3.3 Brownfields Project Organization

- There is a feeling that the grant process really should be three years in length for those communities that are starting from scratch. Large urban cities also have greater internal, administrative barriers to overcome and more stakeholders to involve than do smaller cities. Therefore, large urban areas require more time and money to accomplish the same outcomes as small urban or rural areas.
- The most difficult parts of the Brownfields process relate to attracting developers and marketing contaminated properties, overcoming impediments posed by private property rights, and linking sociocultural and ecological desires with economic values.
- Without a centrally located mechanism at City Hall to act as a coordinator, projects appear to falter. There is a definite need to have a point person who is connected to the city administration and who can act as a conduit to other key players to broker requirements and deals.
- There is no advantage to not having the city involved in the Brownfields process. So much of the land use work for the city is Brownfields. Municipally owned Brownfields are the most attractive for redevelopment. The city is also able to pass bonds to finance the assessment and cleanup.

1.3.4 Distinction Between Urban and Rural Brownfields

- Although there is community interest in both urban and rural Brownfields, the people are usually closer to the project in urban areas and the community usually wants a greater degree of control. The urban area generally has more people and the facility usually has a greater direct impact on the surrounding residential community. As a result, there is a greater need for consensus building. In rural areas, the projects are usually farther removed physically from the public and the concern is usually more for economic impact and jobs.

1.3.5 Elements of Successful Projects

- A common theme is that a successful project requires good management and a supportive local government. The project needs the leverage to make things happen (an aura of power within the municipal political structure). The city must have strong, capable city management with a vision and commitment.
- Current market trends and a strong economy are contributing to Brownfields marketability and developer interest and involvement. There is some question as to whether in a poor economy, or with poor marketability of Brownfields sites, the same level of interest would exist, with or without a Federal Brownfields program.
- A strong emphasis was placed on the need for a single group, organization, or agency within the community that is designated as the main, central authority for the project.

1.3.6 Impediments to Brownfields Success

- A number of problems were related to the creation of false expectations on the part of the community groups. These were attributed in part to a need for public education to develop an understanding of how private sector investment works, the needs and expectations of developers, and the mechanisms for determining marketability and marketing the site. The perception was that community groups believed that all that was necessary was to pick a site and that something would happen.
- Individual property owners were considered a major stumbling block to progress; non-cooperative owners were able to shut down the project at certain points. Two ownership types were identified as particular problems; those that just do not care, and speculators who are merely waiting for the property value to go back up. Some owners still resist the opportunity to dispose of their contaminated property even with new liability provisions; also, some just do not care about the neighborhood.
- People in the community did not own most of the Brownfields properties selected for consideration by the community groups. This reflected the fact that most of the properties in the community are not owned by people in the community. The project had to learn how to deal with “bad actor” private landowners that don’t live in the community and therefore don’t share community vision and values.
- Private property issues were considered important with respect to how public funds could be used in the assessment, remediation, and restoration process. Also considered important were the resolution of private property

rights, how to counteract private owner motivations/intentions that run counter to the overall community goals, and land value changes before and after the assessment.

- The municipal government cannot commit public funds for a site assessment on a property that the city does not own; it opens up too much liability for the city to assess a site before it owns it. It also sets a dangerous precedent that may limit future participation by owners.
- Because of the delays caused by a cumbersome and lengthy foreclosure process, an emphasis was placed on the need for a fast track approach to the foreclosure process that does not infringe on private property rights. Tax foreclosure is a problem especially if the property is contaminated; it can take up to one year. Municipalities also don't want to assume title to highly contaminated land.
- There is a definite concern over the need to remain focused and not to place too much emphasis on the process itself, at the expense of progress toward goals. A loss of "up front focus" on the project was attributed to a myriad of later procedural details and problems. The recommendation is that by the time the project grant is awarded, the project must already have its people organized and should know what it plans to do with the funding. Those Pilots that have moved ahead are those that have had a good idea of what they wanted to do and where they wanted to do it.
- The role of city support to the success of a project was very much emphasized. Problems with the project were attributed to the absence of a complete "buy-in" by the city. Two key questions for project success were as follows: 1) How to gain the community's and metro government's attention and 2) What to say after the attention has been obtained.
- The number of players involved in the redevelopment was considered to have enormous potential for creating opportunities for misconception, miscommunication, and misapprehension about the project.
- In the process of addressing future site uses, there is a major dilemma involved in deciding between three basic alternatives: 1) waiting for the perfect business to become interested in the development; 2) settling for a less-preferred business that is immediately available; or 3) leaving the property abandoned and deferring any permanent decision on future site uses to a later time.

1.3.7 Community Involvement

- Community outreach early in the project cycle is considered critical to establishing the project vision, standards and the public credibility of the effort. A less formal "project structure" is needed over time as banks, developers, administrators, etc., become more accustomed to the process. The assumption is that the more development that occurs in the community, the less control the municipality will have over the end product as other stakeholders become more sophisticated about the process.
- A concern expressed by residents of the community is that for most development projects, they get to go to the public meetings and are heard by project and city officials, but when it comes time to make decisions, they are excluded.

1.3.8 Environmental Justice

- Environmental justice was conceived as being really a question of who has power in the community, how that power is being used to affect change, and who benefits from the exercise of the power.

1.3.9 The Financial Institution Perspective

- There is a real benefit to banks that support the Brownfields process; the alternative could be to foreclose on property of poor collateral and little value. Lenders are now more wary of the possibility of foreclosures. They are interested in the repayment of the loan, not in acquiring the property.

1.3.10 The Developer's Perspective

- The development process generally involves identifying marketable properties for development, lining up potential companies to move into the neighborhood, checking with the city on barriers and regulatory issues/requirements affecting the site, offering a development proposal to the city and/or property owners, and establishing a development team to address critical components such as community interest, site contamination and remediation, permits, financing, etc., in addition to addressing adjacent landowners concerns.
- The physical properties of the site are the key to development, especially parking. The parcel must be large enough to accommodate both buildings and parking. In the past, urban developers, because of high land cost, have tended to maximize coverage of land with buildings and ignore the parking requirement. The parcel also needs good feeder road access with expansion capability.
- Developers usually want to turn a property over for a quick cleanup and sale. They usually have an idea of what they want, what neighborhood they want, how big the site needs to be, what infrastructure is required (such as highway improvements) and what they want to do with a parcel.
- Developers are interested in conducting (and in some cases absorbing the cost of) site assessment and cleanup if reliable cost estimates are available that will enable them to analyze these costs as a part of the overall project cost figures.

1.3.11 State Level Involvement

- The State of Massachusetts has a supportive role in the Brownfields Process, but the projects are traditionally very local, community based efforts, and often are not aware of the State's role. Most local projects do not need to deal with the State since they are typically dealing with low-tier threats. The State uses licensed, private environmental consultants to oversee the clean up and certify that pre-established cleanup levels and standards have been achieved. The State then conducts an audit of the project to verify that established criteria have been employed and achieved.
- The State tries to focus its resources on the high tier sites that really need attention. Determination of these sites is based on a priority list developed under the State Superfund program. The sites are ranked according to their level

of contamination. The State provides technical and planning assistance to communities where needed or requested to put the plans together.

- The State also works with private developers and the local communities to get the development process started. The finding is that the Brownfields process works best when it is implemented as part of a larger development project in the community.
- Based on their frequency of contact with the State to request assistance, the most likely initiators of a project are: city planners, town managers, State Representatives, or potential site developers. The community itself occasionally initiates projects.
- The State is currently drafting legislation to cover the Brownfields redevelopment process. The most important continuing issue for this legislation is the need to determine a balance between helping the developers and protecting the environment.
- Under Massachusetts State law, private owners have no pollution liability until they do a site assessment that documents a problem - therefore they have no incentive to identify contamination and declare a property a Brownfields site.
- Massachusetts has the provision for activity and use limitations on redeveloped property; for example, cleanup to industrial use standards would be acceptable if institutional controls were in place. These institutional controls go on the deed and remain with property. This policy requires continual government oversight and audit capability to insure compliance with institutional controls.

1.3.12 Suggestions for EPA

- EPA should be less restrictive on the city and community's role in the project. The city should be allowed to shape and streamline the project.
- Control of the process should be focused on one key organizational component as opposed to a decentralized community decision-making process.
- EPA should shift the Federal focus to "preparing or enabling property to be marketed."

1.3.13 Program Recommendations or Lessons Learned

- A fundamental requirement is to establish a big education effort and to provide the community with the technical tools necessary to understand how development happens. Community groups need to understand the constraints and the economic forces at work on the project.
- The community should be informed about how to identify hazardous waste and the process for cleaning it up. This includes the mechanics and the decision-making processes of site assessment and cleanup.

- The jobs versus environment question is always an issue and it needs to be evaluated on a project-by-project basis. Typically the worst development proposals also have almost no jobs (e.g., parking lots). There is also a concern that proposals need to be examined carefully to assure that the removal process does not cost more jobs than are created by the new development.

1.4 Project Summary

- The Boston Project emerged out of a previous effort to address an abandoned incinerator site located in the Neighborhood. This experience was leveraged to form the basis for the current project.
- Although the project has made some progress, the definition of progress is often a function of perspective. A number of stakeholder groups within the community expressed dissatisfaction with the project. The project has been criticized for taking too long to get started, spending too much time in the learning process, and not establishing an effective organization. The neighborhood residents, however, feel that the project was a success because they were empowered to make decisions about changes. They express some frustration over a perceived lack of local government support in terms of providing information and guidance.
- The project site selection process was very specific. The community groups tended to stay within the target areas in identifying the sites because the community residents did not want to dilute their resources. They believed it was important to employ a “small wins” approach to establish credibility, mutual understanding, and motivation before addressing larger and more difficult projects.
- The community's concerns included the type and number of jobs created, the associated pay scale, the potential impact to traffic patterns and congestion, the hours of public operation, and good building construction to match the long-term vision of the community's desired appearance. Other concerns included the aesthetic appearance of the neighborhood, and a desire for clean businesses (not re-polluting)
- The community's goals were focused on identifying and attracting green businesses to the community and assisting local residents to establish green businesses.
- The lack of success in meeting project goals was attributed to the following: 1) the absence of appropriate emphasis on the project by the municipal government; 2) a failure to understand the program as an economic development program and to place the program coordinator position correctly within the municipal structure, (both in terms of the department to which the position was assigned and the level of the position itself within the department); and 3) the absence of any staff support to the Brownfields project by the city. It was also noted that the coordinator salary with benefits for 2 years took up a large portion of the grant and that the coordinator had no real economic development experience, nor established reputation and credibility within the city infrastructure.
- Other problems noted were the absence of a coherent and coordinated operation on the part of the city, a poor community vision, the inability to sell the Brownfields value and community needs to the city administration, and confusion as to whether the project was environmental or economic development in nature.
- Recommendations for those program activities that could have been done differently include: 1) centralizing the program under a non-profit agency or group; 2) making the grant recipients themselves the main decision makers;

and 3) designating the Brownfields lead position at a director level within the municipal structure rather than at its current level, as a coordinator.

2. Port of Cape Charles Sustainable Technologies Park Cape Charles/Northampton County, VA

Site visit: January 5 - January 8, 1998

2.1 General Background

The Pilot Project Site is the Port of Cape Charles Sustainable Technologies Industrial Park (STIP) which is proposed for the town of Cape Charles, VA as a means of creating sustainable economic development for the surrounding community and the county of Northampton as a whole. The Brownfields Pilot Project Grant was awarded in September of 1995. This project has also been selected by the President's Council on Sustainable Development as a demonstration project.

The master plan for the development includes operating standards for the STIP that have been embodied in a set of covenants and recently approved by the town council. The Town of Cape Charles has acquired part of the land designated for development, a portion of which is leased to the Industrial Development Authority for use in the first phase of the project. The first tenant has been identified and has already moved into a temporary facility in the county, anticipating the opening of the main facility.

On completion, the park will become part of a larger development project that includes the eco-industrial park itself, a restored wetlands area and nature trail, an environmental education facility, and a tertiary sewage treatment facility. Additional development of a recreation area including the potential construction of golf courses and a residential condominium is planned for an adjacent site along the waterfront. A companion development along a strip of underutilized retail and commercial buildings on the main street of the city is also anticipated.

2.2 Project Contacts

Timothy Hayes, Executive Director, Joint Industrial Development Authority of Northampton County and Its Incorporated Towns; County Director of Sustainable Development.

Thomas Harris, County Administrator - Northampton County

Richard Hubbard, Chairman, Joint Industrial Development Authority of Northampton County and Its Incorporated Towns

Donald Clark, Town Manager, Town of Cape Charles

2.3. Summary of Major Themes

2.3.1 Conception of Sustainability

- Sustainable development here is viewed as a process rather than as an outcome. In this conception, what is done is less important than the manner in which it is done. The objective is to achieve a consistent development process that benefits everyone. The process should be community driven, based on the community's vision and values, and supported by community leadership.

- A sustainable development project must be marketed to the host community in its own context and language in order to obtain acceptance and support. It is necessary to translate non-traditional development into traditional terms. The community needs to understand what is being done and why the project is in the best interest of each individual.
- In addition to the support of the community at large, it is also necessary to develop leadership from within the existing political structure. This requires that the process be explained to the political leadership in a way that they can grasp and understand. Project requirements and benefits must be translated into numbers that local political leaders can use.
- Sustainability does not always mean high tech; this is not always the key to success. A low-tech labor force is often the preferred option. The goal is to develop a diversified economy, matched to the workforce, with challenging career opportunities to promote workforce growth (i.e., both in numbers and knowledge levels).
- In the three circles of the sustainability model (e.g., economy, society, ecology), it does not matter which of the three takes the lead or has the focus, as long as all three of the parameters are moved together toward the center - sustainability.
- Although no single definition of sustainability can be applied to all scenarios, sustainability can be seen as a goal oriented process to bring together all three elements; society, economy, and ecology. It is based on the values of the community and driven by a vision, a plan, and the people of the community.
- Sustainability is a mechanism by which the concerns of the community for environmental integrity can be translated into economic opportunity and social improvement (e.g., jobs and development).

2.3.2 Conception of the Brownfields Process

- The Brownfields redevelopment process is seen not as a one-sided risk, but as a "shared responsibility to address problems." A key factor is to avoid categorizing issues, problems, tasks, etc., according to different elements, (i.e., environmental, economic, etc.) and instead, to consider them as part of a holistic approach. This reduces the number of individual perspectives and counter productive objectives, and places emphasis on "what makes the most sense overall."
- The conception of the Brownfields redevelopment process should be as just one element of a larger overall community improvement or development strategy.

2.3.3 Distinction between Urban and Rural Brownfields

- The definition of community needs and values drives the initial focus of the development process and the choice between redevelopment of the built environment or the creation of greenspace areas. Rural areas already have greenspace so the goal becomes a drive toward economic development. Whereas urban areas already have the economic infrastructure, so the goal here is to drive toward greenspace.

2.3.4 Brownfields Redevelopment Strategies

- The initial funding for the project comes from Federal Grants. Federal grants or other funds help to provide the resources necessary to initiate and accelerate the process. However, the process should not be a long-term development effort based solely on external resources. The project cannot spend all of its effort chasing grants. First, it is necessary to identify where the project is going and then go out and find grants to support what the community wants to do. It is too easy to let grant availability set the direction of the project instead of the other way around.
- One key element is cooperation between jurisdictions. The focus should be on how to help make something succeed rather than whether or not it is part of a particular jurisdiction's effort. If another entity is working on a project, evaluate it to see if it fits into the overall plan and if it does, do not try to stop it or compete with it, figure out how to help it succeed.
- The successful integration of the Brownfields redevelopment effort into the overall master plan of the city, county or region allows both the project and the host jurisdiction to be working together.
- A model strategic plan can be considered that defines development as a public process. The focus is on defining who the development is directed to assist, where they are located, and the assets and liabilities of the community that are involved. All three elements, social, economic, and ecological are considered together, with an emphasis on equity.
- Six general elements form the basis of the model: 1) community values; 2) housing; 3) education; 4) health and human services; 5) reinventing government; and 6) sustainable community development. From this overall model, an action strategy is developed to focus on those specific areas that relate to the experience of the local community and have a potential for development.

2.3.5 Model for Community Involvement

- The important question is framed as how to get out into the community and begin teambuilding efforts to get everyone on the same path. It is often true that the least affected individuals will also be the least interested in supporting new efforts.
- As you identify the needs of the community, its values and priorities also emerge. Development should not be driven entirely by economics. There is also a need to consider other community values as well - such as lifestyle/character of the community.
- A dual perspective on growth can become one of the biggest issues. The poor and disenfranchised will want to see the community change as a way of increasing economic opportunity. The successful and the old guard will have a tendency to resist change. They have their own lifestyle and status definitions and do not understand the development to be in their best interest. Thus, lifestyle and social position are key factors in determining the participation and support for the project.

2.3.6 Elements of Successful Projects

- One key to success in a smaller community is the ability to attract small, entrepreneurial companies who want to reside in a locale with character, that enhances or matches the company image or values.
- In smaller communities, the preference may be for multiple small and diverse companies with smaller workforces, rather than one or two large firms of 200 to 500 people. The belief is that smaller firms have a better possibility of providing continuing employment, even if one or two close down, the impact is not as great as if a single large firm closes.
- Land use decisions should contribute to the economic needs of the community. Land use decisions should also recognize the natural limitations of the area.
- It is considered important to insure that a point of contact exists for maintaining continuity of project responsibility. Once decisions are made by whatever body, it is necessary to be specific about designating the persons to be responsible for carrying out the decision and the associated action (i.e., the people who are going to be responsible for getting things done).
- An important element to the success of the project is the creation of a non-political body to lead the effort. This body must be mission driven (for example, in Cape Charles, a joint Industrial Development Authority (IDA) is chartered under State authority. A set of bylaws clarify who is involved (county and its incorporated cities), how they are represented on the authority (i.e., number of seats for each), and how the involvement takes place.
- The project should make maximum use or advantage of existing resources and features (i.e., use existing facilities through modification or expansion as opposed to building everything new).
- An important contribution to the success of the project with respect to public acceptance and the support of public officials is to have the necessary background information and facts established before the public debate begins.
- There is a need to be more active in public education and awareness efforts regarding the democratic process and particularly the requirements placed on the public in that process.
- Projects that are driven by a community of individuals as opposed to those that are a partnership of individual stakeholders have a better chance to succeed. The important thing is to avoid using the stakeholder concept and consider everyone simply as project participants. The key is to achieve a fully integrated community - integrated into the project goals.
- It is important to make an obvious tie-in between local "sustainable development" and the global UN Agenda 21 so that the community can show the relevance of its plan on a global scale. This helps build credibility and increases local citizen's awareness of how they fit in. This also helps contribute to a national recognition of the importance of the local role.
- The national recognition of the early efforts and strategy conferred by the award of the EPA Pilot Project Grant and other grants was of great assistance in marketing the project both inside and outside of the community. It helped to

solidify the support of the community and increased the dedication and momentum for project. It also added credibility to the efforts of local officials.

2.3.7 Barriers to Development

- The presence of multiple local government structures (town-county-state) can impede the decision making process; as does the presence of overlapping authorities.
- Internal competition with other government or community entities for the same funding is a key point. Clarifying how funds will be used will alleviate internal competition and improve the overall prioritization and coordination of all grant applications in the community. It is important to coordinate the development project with State, regional and county agencies so that they are not all chasing the same funding resources.
- Surrounding property holders don't want to become involved for fear that an assessment will find something. The Brownfields process does not really address the issue of who will clean up if something is found.
- Small communities must rely on outside firms for expertise (legal, environmental, tax, design and architecture). They usually do not have the capability in-house. But these services are also expensive and may be beyond the resources of the community to acquire.

2.4 Project Summary

2.4.1 Impetus for the Redevelopment Process

- The initial redevelopment process began with an Enterprise Community effort focused on economic development - not Brownfields redevelopment. The city created an Enterprise Community Strategic Plan that included an emphasis on sustainable economic development. The Brownfields component was added after the development process was already started. Environmental consciousness and sustainability concepts were a part of the original development mentality and reflected a general sensitivity to the fragility of the environment on the peninsula.
- The impetus for the development appears to have been a recognition of the poor economic situation and a perceived threat to the position of the old guard, the "landed gentry," that had previously perceived the situation as tolerable because their lifestyle was unaffected. There was a perceived critical need to create jobs that challenge, motivate, and would retain the youth of the county.
- The community itself represents a blend of new residents with new ideas and older residents who remained after the economic decline, creating internal tensions and providing for both an impetus to change. Many of the most active participants in the project are long-term residents who could not afford to move out during the decline, when most others did.

2.4.2 Project Coordination

- The sources of authority for the project are based on the county political organization and a State chartered agency. In line with its strategic plan, the county established a Sustainable Development Department under the direction of

the county manager. This department represents a unification of environment and development functions under a single structure.

- An independent Industrial Development Authority (IDA) was formed by State Charter to oversee the project and help cut through county/town politics. The IDA is composed of key community leaders from the county and the town boards, as well as others with vested interests (e.g., local banker). Both the County Administrator and the Town Manager are ex officio members of the IDA Board. They have no vote.
- Historically there has been a poor relationship between town and county. The formation of the IDA and the County Sustainable Development Department has improved the relationship and increased the points of contact between the two.

2.4.3 Sustainable Development Action Strategy

- The early planning was not based on criteria of sustainability, but rather the question of "does it make sense for people, ecology, etc." The plan was based on a local vision and a public will to make it happen; also support from the local politicians. The plan was not really trying to meet an abstract definition of sustainability but was trying to incorporate sustainability into the planning process itself.
- The basic strategy was put together in early 1993 when the Sustainable Development Task Force was created. Six key local industries were targeted for development as a part of the action strategy: 1) agriculture; 2) seafood and aquaculture; 3) heritage and tourism; 4) arts, crafts, and local products; 5) research and education; and 6) new industry (i.e., the sustainable technology park and Brownfields redevelopment).
- The marketing effort was directed to private developers and companies that would share a vision in common with the community (i.e., those that were willing to make a commitment to pollution standards and equivalent wages/benefits; and are therefore willing to do and pay more than the minimum necessary to get into the park).
- The project used the architectural design of the STIP facility as a focus for teambuilding among IDA members. Since the County Administrator and Town Manager were present and involved, and knew their own governing bodies' preferences, they were able to integrate them into the planning process. This shortened the debate of the respective councils/boards and speeded acceptance of the development goals.
- Community input was important at the earliest stages of the plan. It was considered important to develop a "dream" image of what the community wanted. An open town meeting format was used with a TQM type facilitated approach. This was followed by an IDA Retreat conducted by a University of Virginia facilitator. The retreat used an abstract town as its study object, rather than the actual community itself, to facilitate a group design conference.
- The implementation process began by putting all of the players together in a room and then deciding what each could do to contribute to the success of the overall plan. Agencies (Federal) and community groups were able to find money or programs that could support one or more particular aspects of the overall plan.

- The town bought the property from an owner who was interested in eliminating a non-performing asset that was created when the original development for the site was not implemented. The entire park is about 320 acres, of which the Brownfields portion is about 155 acres.
- Covenants have been established for the operation of the park and include incentives based on covenant requirements (i.e., hire locally and reduce energy and water consumption).
- The objectives or criteria for new development included: the creation of new jobs for the currently unemployed (at a "family wage"); attracting environmentally friendly firms with a strong potential for a long term presence; establishing green building standards; recording covenants and codes to control development; and obtaining the involvement of community groups. The general approach is that the area does not need a stratified economy - what it needs is a diversified economy.

2.4.4 Project Success Factors

- The support of the local population for its public officials was a key element of the project's success.
- The new County Administrator (appointed in 1993) was a visionary and represented a strong leadership force at the top. He and the Executive Officer of the Industrial Development Authority (IDA) are the catalysts for the current activity.

2.4.5 Barriers to Development

- Opposition from local groups to any new proposed development was a serious consideration. These groups tend to be strong and well organized. The area has a history of wanting some growth and some jobs but each time a development is planned, they find that it is "not quite what I had in mind." This results in a loss of opportunity for the community.
- There is a problem associated with the existing small town elite. They represent a "landed gentry" that has resisted change and is in a polarized conflict with newer and lower income residents, who are interested in improving employment and lifestyle opportunities.
- The overly restrictive covenants will keep many companies out. The area can expect to attract only five to seven percent of the potential market.
- Tax incentives to attract business to the local area are not possible. The area does not have a strong existing tax base from which to start. Current taxes are high (especially personal property) and tend to penalize development. The agricultural tax rate (equipment tax) discriminates against small farms (they need the same basic equipment as big farms).
- Impediments at the State level include: the narrow interpretation of the scope of State programs by State officials; a tendency to misunderstand local priorities; overly restrictive and narrow criteria for grants/loans; and unrealistic criteria for State initiatives (i.e., based on a "standard county profile" rather than addressing variations across individual counties).

- Wetlands restrictions are a bigger problem than perceived contamination; most of the land is wetland. Suspected contaminants are believed to be a less serious problem.
- The town wants to include surrounding properties in the site assessment and address ecological issues across the entire area. But there is no incentive to property owners to become involved now, only a disincentive. Federal grants are available for the site assessment, but if anything is found, the owner would be responsible for the cleanup and they would still have to have the property checked out again at the time of any sale.

2.4.6 Lessons Learned

- Do not limit the project to pie in the sky type development, when literally anything is needed. The local economy needs as much free expertise as it can get.
- Staff resources are limited and there is no time or extra funding at the local level.
- There is a serious concern for what happens when the grants end - there is no other way for a small county to bridge the gap between the grants and private funding.
- There is a need to consider tax reform options seriously (i.e., reforms and incentives) as an impetus to development.
- There is some difficulty inherent in identifying traditional values versus new values. The newcomers' beliefs and issues are different. Outspoken newcomers and part-time residents do not have a voting share in municipal government.
- The EPA grant is useful to survey the site, but if something is found, then the real problems begin.
- Getting new development users to pay for all of the infrastructure upgrades is difficult.
- The project will definitely change the town and its government. The problem is how to achieve development while preserving the character of the town.
- One problem area was that the project did not provide enough lead-time to government agencies and governing bodies to allow for deliberation before a decision deadline was reached. They should have given the town council and county board time to read the materials and consider their meaning before having to vote.

3. Sustainable Redevelopment of the Urban Core of a Mid-Sized City - Chattanooga, TN

Site Visit: February 16 - February 18, 1998

3.1 Background

The current development project dates back to a 1982 initiative to redevelop the downtown and riverfront areas of the city. The initial concern was a growing problem with poor air quality in the region and a deteriorating downtown core. The original development initiative was combined with a 1986 initiative aimed at the elimination of all substandard housing in the city within ten years.

The first redevelopment effort was concentrated along the riverfront of the city and is part of a larger 22-mile riverfront greenway plan. With substantial progress on the waterfront development already completed, a second focus is currently being directed to an older industrial (foundry) region on the south side of the city. Brownfields redevelopment is a part of these development initiatives.

Although the City of Chattanooga has made previous applications for a Brownfields Grant, it has never been awarded a Pilot Project by EPA.

The city of Chattanooga has a population of 152,466 (1990 Census), 36% of this population is of African-American descent, with 18.2% living at or below the poverty level.

3.2 Project Contacts:

John K Clark, Director, River Valley Partners, Inc.

Robert C. Taylor, Urban Design and Project Development, River Valley Partners, Inc.

Ken Hayes, Chief of Staff, Mayor's Office - City of Chattanooga

William P. Sudderth, President, The Chattanooga Land Company

Joe Fergusson, AVS, Electric Shuttle Bus Designer

William Wilkerson, Derthick Henley and Wilkerson, Architects

Sid Saunders, VP - Government Operations, Site Manager, The Volunteer Site

T. R. Andrade, Marketing Manager, The Volunteer Site

Bev Blair, Marketing Coordinator, The Volunteer Site

3.3 Summary of Major Themes

3.3.1 Sustainable Development

- Purists are not really sustainable. The question that should be addressed is: Are you making sense for future generations? The present efforts at sustainability could benefit from studying what has happened in the past. We should try to duplicate past successes.

- One element of sustainability is to take care of what is already here (i.e. use or reuse what is already available). A second component of this is to build new buildings with some sense of permanence. Buildings should be reusable. It is important to design and build for permanence and with the potential for other uses in the future in mind.
- An important component of sustainability is shared resources. Nothing is permanent or sustainable if it involves just one resource - and the waste of that resource. The linkage and sharing of resources creates a closed loop. For example, linking properties and uses together allows parking in the central city to be shared (i.e., daytime for offices, evening for recreation), and the total land area that must be devoted to parking can be reduced, opening space for other land uses.
- Part of sustainability is that the initial success of one project becomes the selling point for future projects, thereby helping to promote or sustain redevelopment for the future of the community.
- Sustainability means that industries are forced to make a better deal (i.e., eliminates the continuing cycle of Brownfields). Without the linkage to other industries in the region, new industries will stay only as long as market, technology, and costs are favorable. But with the sustainability loop, they have an incentive to remain in the community near the other industries to which they are linked. This means a greater stability in the community (e.g., jobs, residents, etc.) which further enhances the sustainability of the community.
- The issue is as simple as it is complex in that the Department of Transportation never makes any transportation decisions that do not have something to do with automobiles. It never looks at more sustainable forms of transportation like pedestrian, light rail, etc.
- Agricultural sustainability is another factor that must be considered in the sustainable development model.
- There may be a need for regulatory reform. For example, the EPA Regulations for groundwater clean up - are they contrary to sustainability by being overly protective?

3.3.2 Brownfields Program Issues

- The initial \$200,000 EPA Brownfields grant is not a lot of money. What can a community do with \$200,000 but get itself educated about the process.
- We need to figure out the Brownfields problem as societal issue. There is a need to invest the time and money to get people educated on the issue of Brownfields.
- If Brownfields redevelopment is to succeed, the private sector has to be in the driver's seat.
- There is an established fear of public taking. There needs to be a way of addressing the Brownfields issue without scaring the owners.
- Brownfields are not just an environmental problem. The abandoned sites are actually bringing down the entire neighborhood both economically and socially.

- Federal agencies must be a part of the local process to help instruct, understand, and observe.
- An important problem is that there is no clear-cut set of definitions for the Brownfields redevelopment process. There needs to be a glossary of terms. Brownfields should have a Global Environmental Exchange of information.
- EPA needs to define several issues for the benefit of the program including: what the proposed incentives should be; what is considered a successful project; and what role EPA will have (e.g., defer to the State, Federal oversight, regulatory lines of authority and responsibility)?
- There is a definite need to deal with the mechanisms that are used to fund projects. Communities are not finding money for what they need - but lots of money for what they don't need.

3.3.3 Brownfields Development Issues

- Brownfields cannot be viewed from a single-issue standpoint. A larger perspective is needed. For example, in the past, competition for development was primarily with other regions of the country or offshore. Now, competition for manufacturing jobs is between the city and the local surrounding communities. Every place around the city is encouraging industrial development. There are many more rings of growth around the metropolitan areas. Small communities around the larger cities have now been able to replicate every metro area service available in every other community.
- The key question for attracting industrial development into the Brownfields areas is: What is it that they can not get elsewhere?"
- It is necessary to look at the entire picture. You cannot departmentalize the decisions related to development. The need is to focus on the dynamics of the process. Until you look at the problem from the perspective of all the districts and until you get a multi-purpose plan for downtown, the downtown becomes just an office center. This kind of single purpose development soon dies.
- A Brownfields project simply cannot compete with a greenfields project. The pendulum of change has not swung far enough that greenfields are not still cheaper to develop. Brownfields development is not a viable project for the private sector; individual parcels are too small to generate the revenues needed for remediation. It is necessary to leverage government funds (i.e., grants, loans, and loan guarantees) to help defray the costs of remediating the site.
- Despite the extent of sprawl development in the surrounding fringe of most urban areas, the downtown district is the most central and still the most convenient access for most of the residents of the area.
- The timing of development is another critical factor. Suburban mall usage is down, so this is a good time to transition back to the downtown multi-attraction mall. Downtown becomes the preferred site; it is strategically located for the convenience of the public.
- In order to be successful, there must be somebody in the government sector that is committed to getting the project done.

- We have never had infrastructure in the right location, in the right capacity for downtown development. Infrastructure is readily available for development in the suburbs (and is often subsidized by State and county funds). But meeting new infrastructure requirements for downtown is expensive and often must be paid for by the developer.
- It is rare to find a sponsor who wants to be a candidate for a Brownfields development; 95% of them want greenfields with no contamination.
- The key to development success is that the community has committed people - people who care about the community. There is also a need to have good municipal leadership.
- As a result of a catalyst project, the entire community redevelopment project emerges. A key (or anchor) project is required. There must be a public (stakeholder) buy in. Then, small developments spring up throughout the region. Local business and residents begin to invest in their own property once they see what is going to happen to the general area.
- Predicting risk going forward is easier and it is easier to quantify the risk, rather than attempting to go back and reconstruct the risk from past activity.

3.3.4 Landowner Issues

- Liability issues remain a key component and a major hurdle for the redevelopment effort. People are still afraid of the liability issues and it becomes a very legitimate consideration at sale. People feel that the law changed once and it will change again. Despite whatever comfort letters or other indemnifications that may be presented, they may become liable again for the contamination. Non-profits are supposedly not liable - but who really knows? The longer the period of voluntary compliance continues, the more comfortable people will become with the process. The State voluntary cleanup program is a good idea, but it is worthless if the EPA and the DOJ don't formally recognize it with an MOU.
- Absentee landlords that are holding land on speculation for future sale or development tend to keep a low profile and are difficult to identify and track down.
- In dealing with the problem of owner intransigence, you need to have the money in one hand and a hammer in the other (either a State agency or the EPA).

3.3.5 The Community Perspective

- The confidence level of the community is important. There is a "let's see what you can do" kind of attitude. The public's goals may also begin getting higher as individual projects are completed successfully and expectations increase.
- In order to be successful, the development plan requires a "buy-in" on the part of the public at large. You cannot just eliminate the "nay-sayers." A directed approach that focuses on certain groups is one successful approach to gaining public consent.

- The key orientation for the city government is all about jobs. Any industry is welcome but it must be environmentally state-of-the-art.
- Planning and design using the charrette process and involving everybody in the community is important to the success of the project. The belief is that everybody should have a seat at the table - and as many seats as they want.
- It is difficult to get a buy-in on the entire plan; however, it is easier if you take one aspect at a time. The public has a better understanding of individual pieces than it may have of the entire plan if presented all at once.

3.4 Project Summaries

3.4.1 Riverfront Development

- Brownfields is one of a number of problems that have been addressed as a part of the downtown redevelopment project for Chattanooga.
- The local community had both an image and a self-confidence problem. The area was once declared the most polluted city in the country. By focusing on the construction of the waterfront project and the aquarium, the overall confidence of the community in the possible success of its plans was increased.
- One impetus to begin the redevelopment process is based on a sense of urgency with respect to future development. The city of Chattanooga has assets that include extensive scenic beauty, but precious little land for development. The city is already losing some of the scenic beauty to development pressure. There is a perceived need to preserve the scenic beauty of the area; the area is losing greenfields at a rate that is causing concern.
- In 1982, a concerted effort was made to do something about the city. A local foundation shifted its orientation to a focus on the community and moved other local foundations with it. The waterfront became the most obvious place to start a redevelopment plan.
- The foundation set up a company to formulate the plan and implement downtown development. The company, established as a 501c(3) company - not for profit, was endowed by \$10 million in private foundation money. Although the effort was privately funded, there was also representation from multiple community groups.
- An emphasis was placed on the intangibles or subtleties of a project that help it to succeed. The question is what makes it possible for a mid-size community like Chattanooga to tackle major redevelopment. There is some advantage due to the high degree of communication and coordination in the city. Also having the same people involved in Brownfields as in other community development projects is an advantage. Small to mid-size communities do find it a little easier to tackle problems and gain public confidence than do larger urban areas.
- The planning exercise itself was development oriented. The process matched two simultaneously formed grass roots efforts - one as part of a downtown redevelopment effort and the other with a goal of eliminating unfit housing in the city within ten years. The process became a National Model for Community Consensus Building. People felt

that they were a part of the effort. The public involvement served as a base for establishing the credibility of the project and obtaining public support for future plans and proposals.

- The project began with a two-year design process. Using the available private resources, a plan was prepared and presented to the public for review. The intent was to go where the private sector was normally not prepared to go.
- A conference room is maintained in the offices of the Development Corporation that serves as a central meeting room and conference facility for the downtown district. Several displays show a before (or current) picture of a site and a completed picture or artists conception of what the completed project will look like. The primary purpose of this facility is to be a central place for any and all issues, meetings, etc., related to downtown and its development. This includes public meetings and issue groups not directly related to the design process.
- The public meetings focused on what "fixes" the residents would like to see implemented. The emphasis was placed on four areas, people, places, government, and work. (Examples: People - quality of life, human rights; Places - parks, attractions, housing tracks). The meetings received a genuine community response and genuine input to the plan. They provided an opportunity to review proposals and prioritize them. From the results of the public meetings a work plan was developed.
- The redevelopment plan is part of a 20-mile waterfront project defined as Moccasin Bend. The project, which covers multiple eco-systems, was developed through the Lyndhurst Foundation. The key issue was that the public would be allowed access back to the river. Existing structures along the waterfront had privatized the shoreline and cut off public access to the river. The total project cost was estimated at \$750 million in '85 dollars.
- The emphasis of the proposed plan was on a mixed-use development with the proposed new aquarium project as the anchor. An effort was made to keep national franchises out of the aquarium district in order to maintain local character and increase opportunity for local entrepreneurship. The city put detailed design and development restrictions on the land. This included a requirement for a design review and a review of economic impact and employment figures for any new development.
- Chattanooga initially could not find developers willing to do anything. They found they had to try to do it by themselves and formed their own company.
- One important question was that of what would attract people to downtown. The county has developed all of the industrial sites in the area, and 80-90% of county projects are composed of people who have relocated from downtown.
- One important aspect of the plan is the Architecture Review Committee. The residents can demand that new entities in their own neighborhood conform to certain standards.
- The Riverfront Development effort contributed to the overall city development, but it was not intended to compete with the development of the downtown district. Since the planned growth in the city was primarily internal (not dependent on outside business moving in) there was concern that spec building on the riverfront might attract tenants from the downtown core where the existing office and commercial centers are. This would have the potential to create new abandoned or underutilized properties downtown. Through zoning changes, the city was

able to enforce recreational uses for the waterfront area, thus not detracting from office and commercial development in the downtown core.

- The proposed riverfront plan emphasized the Aquarium as the keystone of the project. It currently attracts an additional revenue of \$6,000 a day to the downtown area, as compared with the initial cost of \$45 million to build it. In terms of the overall economic impact of the aquarium project, it is estimated that the completion of the aquarium stimulated another \$280 million in additional investment in the downtown area.
- The city has seen a huge growth in sales and property tax revenues and feels that the money spent on redevelopment since 1982 was well worthwhile.

3.4.2 Southside Development

- Having accomplished the waterfront project, the new focus is on redevelopment of a 640-acre tract on the south side of the city. The intention is to turn this area into an urban redevelopment zone. But, the planners want to avoid the "condemn and bulldoze" variety of development. The intention is to develop the area in line with a mixed-use plan that emphasizes reuse of existing structures wherever possible. Another important concept is that there will be no taking of owner occupied housing. The plan is to work with residents to encourage them to stay in the neighborhood.
- The project is conducting an environmental assessment (Phase I) on the entire 640 acres at one time. The end product is intended to produce a CD containing baseline environmental and land use data for the area - Sanborn Maps. The results of the survey will be incorporated into the city's GIS database. Although most of the land in the designated area is in private ownership, the Phase I study will be conducted as a quasi-government agency effort without asking any permission of the owners.
- Some innovative solutions have been identified: ISTEA funds were available for some projects; highway right-of-ways have been used for greenways (e.g., tree farming, agri-tech studies, etc.); the city has also been able to exchange indemnification for contaminated land in some cases.

3.4.3 The Foundry Site

- The Foundry Site redevelopment project is one part of the overall Southside development effort. The site had a 100-year history of foundry activity, mainly cast iron, and was characterized by a lot of waste and by-products of the foundry operations. The sites original owner had no ability to do anything with the site. The site was placed on the CERCLIS list.
- The State advised a cap on the site to prevent any water penetration, but the site was designated for recreational uses and the city wanted a green site with reuse of the existing buildings. The site was to be developed as a football stadium. Development of the site required extensive planning to incorporate green areas into the design.
- For the parking areas, a pervious concrete paving technology was adopted to drain water away from the site. The design concept was to develop an environment that allows for green growth, but still controls water infiltration. There was some risk in the original design, but the State remained open-minded about use of the new technology.

The result was a unique design that incorporated impervious pavement, semi-pervious capture areas, and water storage in sub-soil storage cisterns where it could be retained for use during the dry seasons - a sustainability factor.

- The project was unique in that it required extensive planing and cooperation between Federal, State, city, and county officials, with the private sector putting up at least half of the money.
- The architect had to do a lot of selling. There was a need to convince the community at each point along the way. What got the community moving was tying the project to an overall community effort that had a region-wide focus.
- Essentially, the project tried to include all stakeholders and focus on the overall regional approach rather than on just the site itself. The end result was that the originally conceived project, which was to be about 20 to 80 acres, was expanded and a plan for the redevelopment of the entire 680-acre Southside area was created.

3.4.4 The Electric Bus System

- The electric shuttle bus system, developed for use in downtown Chattanooga, was a speculative enterprise in conjunction with the city transit association. The system uses three parking lots - paid parking - to funnel traffic into the system. Revenue from the parking is used to subsidize free ridership on the system. The system, initially conceived as a downtown transit solution, has also become a social phenomenon in the city. It has become a mechanism for social gatherings and information exchange. Downtown business people use it to travel to the riverfront for lunch - this helps build restaurants there that would otherwise have a lunch business only if they were located in the office sector.

3.4.5 The Cavalier Development Project

- The Cavalier site was formerly the largest industrial site (multi-parcel) in Chattanooga. The site has had some long-term environmental issues - specifically regarding groundwater. The property contains 230,000-sq. ft. with 18 of 21 buildings on the site already demolished. The initial estimate was that \$4.6 million would be required to get the property into modern operational condition; some of this is cleanup cost.
- The Cavalier Site project used uncontaminated portions of the site as collateral for a bank loan. The project depended on the unique quality of the banks and the owner's financial stability to leverage additional funding. It was important to have a community based bank to make this kind of project work; no outside bank would have been as knowledgeable or comfortable with the process.
- The approach employed was to enter a voluntary compliance track with respect to the site by encouraging owners to come forth and work jointly to address cleanup. The solution was to put the land into public ownership with a leaseback provision. Public ownership solved a lot of existing problems, and allows access to Federal and State funding to help remediate the site.

3.4.6 The Volunteer site (BRAC)

- The general approach is to treat these facilities as national assets - rather than liabilities. The need is to market these sites to the local communities. The premise is that these sites should be recognized as an asset where they are now perceived as liabilities.
- Owners are beginning to realize that no matter what they do, they have a permanent liability under the current regulations (i.e., whether they continue to own, sell, or do something else). But if the orientation is changed, there are assets here that can be developed into revenue that could be used to pay for the cleanup.
- The proper management of liabilities turns them into assets, assets can be turned into value, and value can be turned into work for local residents.
- In the revised approach, you do not remediate and you don't ever sell the property. Investment goes into the construction of new capital (buildings and equipment). What was a liability, now becomes an asset as the facility is leased back to a new operation. The leaseback becomes an asset instead of the liability that remediation presented.
- An example is found in existing Federal sites. The government cannot sell them and it has no money to operate or remediate the sites. If they call in an environmental company to remediate the site, they are still left with the liability. The better approach is to lease the site and not remediate - spend all the money on buildings. If there is a real threat, such as a moving plume, then address it; otherwise, if there is no emergency then leave the contamination where it is. Essentially the lease continues while the asset value of the land grows. Over time, it equals the liability of remediation.
- The idea is never to spend money on cleanup while still retaining liability. The idea is to improve the value of the site until it equals the liability.
- One solution is that corporations set up a land trade. They give the State title to one parcel as a swap for the lease on another. The State gets revenue for the lease and the company gets out from under the liability. In another variation, it is not necessary for the corporation to give up its assets to the State. Using the leaseback provision, the corporation can give the land to the State, but keep the capital equipment and leaseback the land on which it sits.
- The focus should be on reusing facilities as assets rather than holding them as liabilities. The Volunteer site remodeled several old Army buildings and leased them to the Hamilton County School Board. In another example, it was possible to pay for the cost of having an old building torn down with the revenue generated from the salvage metal inside - this actually generated income and now has eliminated an eyesore. Recycling can actually be a form of financing for the remediation and restoration requirements; a sort of "Bootstrap financing."

4. Creation and Maintenance of a Brownfields Site Inventory New Orleans, LA

Site Visit: February 5 - February 8, 1998

4.1 Background

The primary focus of this project is the identification and categorization of Brownfields sites within the city of New Orleans. This effort is intended as part of a larger effort to improve the environmental quality of socioeconomically disadvantaged communities in the city. The Brownfields Pilot Project Grant was awarded in September 1995.

The project was proposed as a means of developing an inventory of Brownfields sites to be used in reclaiming land for industrial or business use. The effort includes the development of criteria for ranking the sites in terms of their economic development potential. A community outreach plan has been developed and implemented for the purpose of obtaining neighborhood input to the process of site identification and ranking.

According to the 1990 Census, the population of the city of New Orleans is 496,938. Approximately 65% of the population are of African-American descent, with 30% of the population at or below poverty level (based on an approximate calculation).

4.2 Project Contacts:

Audrey Browder, Holy Ghost Community Resident
Allison Price, Office of Councilman Oliver Thomas
Eric Schneider, Special Projects Developer, Habitat for Humanity
Selim Berkon, Project Manager, Historic Restorations, Inc.
Gwen Owens, Director, Mayor's Office of Urban Development
Timothy Jay Carney, Project Manager, Mayor's Office of Urban Development
Arnold Baker, Deputy Assistant to the Mayor for Business Development
Gary J. McNamara, Assistant Vice President, Real Estate Finance, First NBC
Sandra Gunner, Gunner and Associates, New Orleans Brownfields Facilitator
Edward Jackson, New Orleans Brownfields Consortium member
Michelle V. Enright, Deputy Director, Mayor's Office of Environmental Affairs
Abe Tahir, Jr., AARP SEE Program

4.3 Summary of Major Themes

4.3.1 Brownfields Program Issues

- A set of standard Brownfields models should be developed that are categorical so that a community could identify itself according to different sets of criteria and then select a model that fits the profile. Categories could be based on such things as the type of site, associated hazards, type of community, scale of the project, etc. The models should show how to integrate Brownfields into an overall regional development model based on economic,

transportation, and infrastructure development. Models can help the community understand the development process and their own needs.

- There is a need to develop base criteria for the selection and operation of Brownfields grants or loans that provide guidance, yet still allow considerable flexibility in application. These could be similar to those found in HUD Section 108.
- Assistance is needed in the areas of assessing ecological, economic, and sociocultural resources; linking Brownfields redevelopment into a comprehensive city plan; and in developing strategic business plans to sell Brownfields redevelopment.
- The current economic climate and project timing are critical factors to the success of a redevelopment effort.
- Academic representation and resources are both helpful and economical for the development of a project and involve both youth and advanced technology in the process. Universities are usually a couple of steps ahead of the city in urban planning and GIS technology.
- There is a need for state-level Brownfields funding legislation and flexibility in how communities can apply funds to the redevelopment effort.
- Information from the initial Pilot programs should be made available; there is a need for feedback from EPA regarding process improvements in the Brownfields project.
- More Brownfields conferences should be conducted, but on a regional level to highlight issues and alternatives that are more regionally or locally feasible, and to enable greater attendance.
- A list of developers who are interested in developing Brownfields sites could be created and placed on a WEB site in much the same way that available properties are now being listed. This would assist communities in identifying potential developers for their properties who are qualified and interested in becoming involved. City agencies or owners could survey a list of developers before selecting one to develop a site.

4.3.2 Community Involvement

- The challenge is in getting the community to take responsibility for the appearance, vitality, and marketability of the community as a whole. It is important to overcome the "let someone else do it" mentality and make changes locally. Brownfields are often magnets for crime. There is also a need for crime prevention and litter prevention programs.
- The first meeting in a community is critical to establishing trust and credibility; trust must be earned as the process develops.
- The general public does not always understand the risk; the health implications must be translated into plain English.
- It is not certain that all of the community involvement in the program is essentially beneficial. At some point you have to limit the community's role and listen to the developers. With respect to the determination of cleanup levels

it may be important to de-emphasize public participation and approach it more as a negotiating process with the respective developer.

- The problem of community involvement is that you wind up dealing with the segments of the community that are the most vocal. This does not always provide a true picture of the community's wishes. Developers may sometimes have a better idea of how the project will move forward than does the community.
- Training community residents to assist in site screening, assessment and cleanup, is a bottom-up or grass roots approach to the problem. It makes use of the community's existing knowledge of the problems and also increases community awareness of what it takes to resolve them – creates an inherent prevention mentality.

4.3.3 Environmental Justice

- Environmental justice communities are usually overburdened with some kind of environmental problem. This becomes a serious issue depending on what kind of cleanup is contemplated. There is really not a lot of room for error on this issue. It is necessary to deal with the issues as they come up, even if it slows down a project.
- Environmental justice is really a question of how you respond to the cleanup problem and what or how cleanup levels are established.
- Risk concerns are primarily health related. The relationship between good jobs and increased risk does not necessarily hold up. Residents need to see the connection between good jobs and a healthy, safe community.

4.3.4 Benefits of the Planning Process

- The focus on the planning process itself (as opposed to the plan output) is one key to a project's sustainability because it is in the process that the inhabitants of a community become involved. The plan evolves as the community needs change, thus enhancing its sustainability.
- A comprehensive plan serves as technical assistance to potential developers by setting consistent standards and guiding them in understanding what the community wants.

4.3.5 Developer Participation and Commitment

- Inherent in the process of inner city development is a developer that will work with or adjust to the city plan and is willing to use alternative technologies. The city should have a mechanism in place to assure that developers are selected on the basis of qualifications.
- The advantage to developers is that they can get some pretty valuable real estate. The position here is positive and differs somewhat from other projects. Here the perspective is that the community has valuable real estate available and has something that developers and investors should want rather than something that must be sold or marketed.

4.4 Project Summary

4.4.1 Overview

- The New Orleans Brownfields initiative is among the first major projects begun after the formation of the Mayor's Office of Environmental Affairs, within the Department of Economic Development. The Office of Environmental Affairs was established at the urging of the Mayor and has a strong commitment from the city government.
- The Mayor's Office of Economic Development wants the Brownfields project to be a part of the overall redevelopment of the city. The first priority is to sustain the viability of the city as the core of a regional economy and society. The Brownfields program serves as an incentive to refocus development back into the city.
- The Brownfields process was initiated in the summer of 1996 by a push from the Mayor's Office. Initially they wanted to identify 10 sites as demonstration Pilot Projects. A key element of the project was to correct a lot of past wrongs and to get the right people involved in the future.
- The formation of the New Orleans Brownfields Inventory Consortium was the initial step in getting the project started. The primary objective was that the Brownfields effort should be a comprehensive process.
- The authority for the Consortium is a charter by the Mayor's Office through the Office of Environment. The Consortium is the city authority for Brownfields. They are charged with formulating a marketing plan, describing their view of what the community should look like. They have the freedom to act as they see fit, independently of the city government.
- New Orleans is a unique city because of the tightly structured neighborhood communities and the strong identification of its citizens with local neighborhoods.
- Each neighborhood elected a representative to serve on the Brownfields consortium. Ground rules were developed for how the Consortium would operate, including the weighting criteria applied to different stakeholders, and the selection of delegates with voting privileges.
- The primary basis of the effort is the neighborhood town meeting. The proposed identification of Brownfields sites is through input from these neighborhood groups. Neighborhoods essentially drove the process. Each neighborhood brings its own unique characteristics to the Brownfields process. The project also relied on the historical memory of residents for the description of previous site activities.
- A priority of the city's Environmental Development Office is greenspaces. The office is cooperating with other groups to establish "pocket parks" and gardens, and to try to set aside money for city maintenance. Several places exist in the city that are amenable to pocket parks. Safe greenspaces are important to the city, but public safety and maintenance costs are the biggest impediments to public parks.
- New Orleans as a green city; there are pristine areas within ten miles of the city that offer a potential for eco-tourism. The department of the Environment is proposing a green map of the city to help get out the word. The greening process is definitely dependent on education and valued experience.

4.4.2 City of New Orleans Plan Development

- The city is currently working on the development of a new strategic plan to cover 25 neighborhoods. The plan involves a neighborhood audit (walk through) and a grass roots planning effort as the key components. The neighborhoods will determine what the issues are and decide what elements they want to address. Potential developers must show evidence that their plan for a site has been taken to the community for review. The community can reject a developer's proposal following review.
- The project developed Comprehensive Strategic Community Plans with Brownfields as a key central point. The use of formal neighborhood meetings was effective in developing the needs assessment and components of the Comprehensive Strategic Plan.

4.4.3 The Urban Development Initiative

- The focus of the city's economic development effort is job creation. An active outreach effort takes meetings and programs out into community to develop a broad working base within community. The city has reactivated its Industrial Development Board and created a Developers Forum that will include a Brownfields session, GIS maps of the city with Brownfields pieces shown, and a presentation of current and future redevelopment opportunities.
- The city is gathering information for the creation of new databases from the GIS system. It is identifying city owned or city-leased buildings, Brownfields, and Federally owned properties. A map is being prepared to identify these properties, community-wide.
- The city is finding many groups that are looking for investment opportunities; there is also a need to provide assistance to existing resident businesses on how to diversify and remain competitive. The city created the Office of Small Emerging Business Development to identify investors in the local community.
- One incentive to development is the Restoration Tax Abatement Program. This allows the city to put a hold on taxes for up to ten years. Rates are held at pre-construction levels for 5 years in the case of residential development and an additional 5 years for commercial development. This program has encouraged major development downtown. The total abatement versus the total reinvestment in the city turns out to be a plus for the city.

4.4.4 The Developer's Perspective

- Developers are currently making money by bringing people back into the city. The philosophy is that if the city dies, eventually so does everything else surrounding the city. The developer's interest in a site is because it is potentially a profitable development site, not necessarily because it is a Brownfields site.
- The issue of displacement is less important when dealing with abandoned industrial properties. Renovation of these properties contributes to the strengthening of the original community by providing a new residential component (i.e., a higher income population like artists/academics attracted to unique redeveloped areas).
- The Consortium needs to provide assistance to contractors in understanding what Brownfields means to the development of the site. The question is what does the Brownfields initiative bring to the table that is more than what was there before.

4.4.5 The Financial Institution Perspective

- An important element was to define for the Consortium what the financial community could and could not do - essentially to get expectations in line with reality. The bank provided guidance on how to look at the site from the standpoint of the investor/developer - what is financially possible and what is not? The bank helped to define what would be realistic to finance; and defined what a “bankable situation” is for given locations. The bank also assisted with the development of realistic rules or RFP guidelines, and guidelines about how project money could best be utilized.
- The bank informed the project on what made sense from the banker's perspective, but did not get involved with the day-to-day activities and politics of the Consortium. It also offered criteria pertaining to real estate principles to help the site selection process, but left the Consortium alone to work through the selection process.
- The community itself is usually more comfortable working with local banking institutions that have a good track record in a community.
- Money is a finite resource; the bank is looking for the best return on its investment, both in terms of a capital return and in terms of the community's attitude toward the bank.
- From the perspective of the commercial real estate investor, each site has many different potential uses/directions for redevelopment. It is important to consider the viability of investment in all the possible redevelopment strategies, including the environmental remediation process itself. From experience, the bank has learned that it is not just the property, it's also the surrounding land area that makes the difference in a loan.
- The repayment of the loan is the major issue for the bank. It is important to understand the process that the bank has to go through to get a loan paid – identification of the risks, loan-underwriting criteria, the loan process itself, and how the repayment will be made. There must be a sound basis for repayment including sufficient cash flow and some long-term equity component; something that creates an equity value (i.e., can be reused or will retain value). The bank will also look at any included grants and loan guarantees.
- The perceived level of contamination has scared off many investors haphazardly. Banks especially have always been the deep pockets at the end of the tunnel. They need some “safe harbors” from environmental liability. Now, banks are excused if the acquisition is involuntary (e.g., foreclosure).
- To satisfy the requirements of the loan, the investor is looking for the adequacy and competency of the cleanup. There must be full cleanup to expected land use requirements. On a limited use project, Phase I and Phase II assessments are essential. A limited cleanup to risk-based, re-use development levels is possible but this poses an additional capital expense – risk varies on a case by case basis.

4.4.6 Environmental Justice

- The city Open Access Program was created in response to the need to include women and minorities in the business/entrepreneurial activity associated with redevelopment. Created by an Executive Order of the Mayor, it

includes Woman/Minority Equity Investor Goals as well as Employment Goals. It is part of an active effort to avoid gentrification in city programs and increase the opportunities for home buying in lower income neighborhoods, as well as to aid the development of local entrepreneurial efforts.

- There is concern for minimizing or avoiding displacement of residents. A “first right of refusal” principle and savings/loan incentives are being used by the city to help long term residents resettle in redeveloped properties.

4.4.7 Potential Impediments to Brownfields

- A major impediment was not having enough information; specifically information about the Brownfields program itself. The Consortium felt that it understood much more after the National Brownfields Conference in Kansas City. There is a general opinion that the Consortium needs more information on the relationship of Brownfields to Empowerment Zones, tax incentives, development process, etc.
- The Consortium is understaffed and depends on support from its parent government agency, the Environmental Office. The Consortium needs the resources to develop its own staff.
- Liability is still a key issue. There is no clear picture of how the owners will fare in the process.
- Most people are very territorial; the neighborhoods are especially sensitive. Participation in the community network helped overcome these sensitivities and established the program’s credibility in the individual neighborhoods.
- It is not possible to address just one problem in an area. There is a need to address the area as a whole; to work with neighborhoods to do a comprehensive needs assessment. In order to succeed, it is also important to watch other community groups that are active in the area to see what they are doing.

4.4.8 Development Strategies

- New Orleans is basically asking developers to put all their chips on the table (i.e., show all aspects of their proposed plan) and get involved in the community process.
- The city has created a Brownfields Day to help advertise the program and show the potential for development and support in New Orleans. They are planning 16 booths for environmental professionals and developers to discuss issues with participants as well as representation by government agencies and universities with related programs. Workshops will demonstrate how the Federal program works.
- One strategy being considered is to look at more incentives for the non-profit sector as a source of development. For example, Habitat for Humanity has already constructed 27 units throughout the city in the years since its inception. The type of site that is normally identified as a Brownfields site is amenable to the construction of multiple houses simultaneously (what Habitat calls “Blitz Building”), increasing the efficiency of the volunteer labor that such organizations may have available.

4.4.9 Prevention of Future Brownfields

- A key element is the effort to increase public awareness of the problem and the solutions that are being implemented. For example, Brownfields Day which is proposed as a mechanism for getting out the word on the problem.
- One mechanism that has been explored is the setting aside of specific lands for preservation and future green-development.
- The creation of an environmental code for the city will help in reducing the number of abandoned sites. One example of this technique is found in New Jersey where some controls have been placed on industries leaving the state. There is an attempt to set up the same conditions in Louisiana.
- The development of a Strategic Enforcement Program to control the environmental quality of Brownfields properties after cleanup and redevelopment is being implemented. The effort is to clean up sites to prevent future abuses (trash tends to attract trash).

5. Site Inventory, Characterization, and Development Potential for Communities in the Woonasquatucket and Blackstone Watersheds State of Rhode Island

Site Visit: January 30, 1998

5.1 Background

The objective of this project is to return under-used, contaminated properties to productive use with particular emphasis on the reuse or recycling of the multiple abandoned mill sites and structures that are found along the Woonasquatucket and Blackstone Rivers. The subject area is part of a proposed plan to create a greenway along the Woonasquatucket River. The Brownfields Pilot Grant was awarded in June 1996.

The goal of the Pilot Project is to create a model plan to identify and characterize sites for contamination and market potential. The strategy developed will allow for accurate determination of present levels of contamination and accurate estimates of the associated clean up costs. When completed, the strategy will represent a transferable model for site characterization and remediation that could be used by other Brownfields Communities. The project is also attempting to leverage additional resources and support to continue to address Brownfields redevelopment in the affected communities of the watershed areas of the two rivers.

The population of the State of Rhode Island is 1,003,464 according to the 1990 Census. Approximately 8.6% of the State's population are minority, with approximately 9.2% living at or below the poverty level.

5.2 Project Contacts:

Timothy Reagan, Principal Engineer, State of Rhode Island, Department of Environmental Management, Office of Waste Management

Jane B. Sherman, Project Director, Woonasquatucket River Greenway Project

5.3 Summary of Major Themes

5.3.1 Lessons Learned from the Pilot Project experience

- One mechanism for the initialization of a project is to start by building a connection to the urban community. Identifying central issue groups that already have connections to the community can be useful in terms of developing an identity and establishing the proposed project's credibility with the community. The Brownfields agenda can be integrated into the larger plan/agenda of these other local groups. The project focus can be addressed to these groups to make use of group meetings and networks that are already established.
- The planning departments in most cities are overworked and are probably not in a position to be very helpful to the project. It is important to connect with the city economic development people.
- If a new Brownfields organization cannot be created, use other people's organizations to get started.
- An ecosystem-based approach, focused on water resources, may not always work successfully with urban sites.
- It is important to keep the focus of the project concentrated on abandoned properties.
- EPA's concern about recovering Federal cleanup costs from owners or responsible parties complicates the Brownfields effort.
- The worst part of the Brownfields process is getting to the cleanup stage.
- The role of the city government is critical in obtaining commitment to acquire properties, overcoming difficulty and delays in getting to the right person for decisions/guidance, and in funding remedial design plans.
- The ideal Brownfields site has no owner, and is ready to be taken over by the city.

5.3.2 Environmental Justice

- Environmental justice continues to be a significant problem. Local community groups often do not want to discuss economics. Although the neighborhood needs jobs, it also needs greenspaces.

5.4 Project Summary

5.4.1 Overview

- A decision was made to employ an ecosystem-based approach to redevelopment planning because most Brownfields sites under consideration are old mills adjacent to rivers. Most of the mills that were still structurally viable have already been re-utilized, so the project had to focus on those sites that had some sort of problem, either contamination, structure, or accountability.

- The old mill sites offered significant architectural and other features that made them attractive for redevelopment. The mill sites were mostly woolen mills that have good public accessibility and are therefore also a direct threat of human exposure to contaminants.
- The Brownfields project included the nomination of candidate sites by the five municipalities (one from each county) that were included in the project partnership. Using previously established Brownfields criteria; the initial list of 120 nominated sites was reduced to 50 sites that represented viable Brownfields type problems. A further reduction of the site list was made on the basis of the condition of existing facilities, socioeconomic factors and infrastructure considerations.
- Two target sites have been identified; one is a typical inner city neighborhood site, with known contamination problems, that the city intends to purchase in cooperation with a third party community group; and the other is a fairly isolated site located near a public park and some tough public housing. Both sites are located in a flood plain along the river. Currently, these sites have little to no marketability due to location, the estimated cost of cleanup, the lack of greenspace, and the unattractive appearance of the neighborhood. The surrounding residential area is very built up but with a number of old dwellings many of which are abandoned.
- Areas of significant concern during the project included: housing problems, site accessibility, a waterfront location - but also located in a floodplain, potential transportation impacts, and the need for greenspace.

5.4.2 The Providence Plan

- The Providence Plan was identified as a pre-existing community group that was already working in the affected neighborhoods. The plan addresses issues of the inner city urban development process. The goal is to establish new directions for housing and urban development. The organization is also investigating welfare to work issues - matching skills and jobs.
- A cooperative project with the Brownfields Pilot Project was established. The Providence Plan provided socioeconomic expertise; the Department of Environmental Management provided the environmental/technical expertise.
- The project keyed on the river as an asset that, if used properly, could be a catalyst for redevelopment of the target neighborhood. The vision was a Waterfront Park in downtown Providence
- The larger goal was to convert the subject neighborhood into a place where people would again want to live.

5.4.3 External Support

- Local university students supported the site redevelopment-planning project. Working in conjunction with a graduate supervisor, they participated in the site identification and screening process.

- Operating primarily on grants, the project is required to juggle a number of variables including the differing timeframes of grants, the overall activity, and the involvement of other community organizations that are dependant on grants.
- The project is interested in tying into additional sustainable development grant money that may be available such as EPA's Urban Environmental Initiative.

5.4.4 State Department of Environmental Management (RIDEM)

- The State remediation regulations have been amended to include enforcement and cleanup standards. The Department has also published a road map on how to comply with these regulations.
- State regulations require that a Remedial Evaluation Report be prepared for any site; the owners or a State representative can prepare the report.
- Cleanup levels are authorized to either restricted industrial or unrestricted residential use. The finding is that a lot of owners/developers will dig a little more for an unrestricted use permit.

5.4.5 Recommended Pilot Site Expansion

- Several important areas need to be addressed including testing the theory on other ecosystems, site ownership and recouping costs from the owners.
- The plan is to expand by acquisition of three to four sites with mills that are still standing, in order to broaden the project's experience with different sites.
- The project is also looking for more information on how to locate a business in a big mill building.

APPENDIX F
SUMMARY OF ON-SITE INTERVIEWS

Appendix G – Local Contacts for Brownfields Projects Cited in this Report

This appendix presents selected contacts for the Brownfields Projects that have been referenced in this report. They represent the most recent addresses available at the time this report was printed. In addition, information may also be obtained from the EPA Regional Brownfields Coordinators and EPA National Headquarters contacts listed below.

Brownfields Project Contacts

BALTIMORE, MARYLAND

Brownfields Project Director
Baltimore City Department of Planning
417 East Fayette Street, 8th Floor
Baltimore, MD 21202-3433

Telephone: (410) 396-4367

BOSTON, MASSACHUSETTS

Brownfields Coordinator
City of Boston, Office of Environmental Services
Boston City Hall, Room 603
Boston, MA 02201

Telephone: (617) 635-3425

The Dudley Street Neighborhood Initiative
513 Dudley Street
Roxbury, MA 02119

Telephone: (617) 442-9620

BRIDGEPORT, CONNECTICUT

City of Bridgeport, Office of Planning and Economic Development,
c/o BERC
10 Middle Street, 1st Floor
Bridgeport, CT 06604

Telephone: (203) 335-1462

BUFFALO, NEW YORK

Office for the Environment
920 City Hall, Room 907
Buffalo, NY 14202

Telephone: (716) 854-5633

BURLINGTON, VERMONT

Community and Economic Development Office
City Hall, Room 32
Burlington, VT 05401

Telephone: (802) 865-7144

CAPE CHARLES – NORTHAMPTON COUNTY, VIRGINIA

County Administrator, County of Northampton
16404 Courthouse Rd., P.O. Box 66
Eastville, VA 23347

Telephone: (757) 678-0440

Executive Director,
Joint Industrial Development Authority of Northampton County and Its Incorporated Towns

APPENDIX G
LOCAL CONTACTS FOR BROWNFIELDS PROJECTS

16404 Courthouse Rd., P.O. Box 538
Eastville, VA 23347

Telephone: (757) 678-0477

Director, Northampton County Department of Sustainable Economic Development
23 Park Row
Cape Charles, VA 23310

Telephone: (757) 331-1998

CHARLOTTE, NORTH CAROLINA

City of Charlotte, Economic Development Division
600 East Trade Street
Charlotte, NC 28202

Telephone: (704) 336-3955

CHATTANOOGA, TENNESSEE

Chief of Staff, City of Chattanooga
Suite 100, City Hall
Chattanooga, TN 37402

Telephone: (423) 757-5152

RiverValley Partners, Inc.
One Central Plaza, Suite 800
835 Georgia Avenue
Chattanooga, TN 37402

Telephone: (423) 265-3700

CLEVELAND, OHIO

Director of Economic Development,
City of Cleveland, Department of Economic Development
601 Lakeside Avenue, Room 210
Cleveland, OH 44114

Telephone: (216) 664-2406

GREENFIELD, MASSACHUSETTS

Town of Greenfield, Office of Planning and Community Development
277 Main Street, 4th Floor
Greenfield, MA 01301

Telephone: (413) 772-1548

NAVAJO NATION, ARIZONA

Executive Director, Navajo National Environmental Protection Agency
Window Rock Boulevard
Window Rock, AZ 86515

Telephone: (520) 871-7692

NEW ORLEANS, LOUISIANA

Director, Mayor's Office of Environmental Affairs
1300 Perdido Street, Suite 8E06
New Orleans, LA 70112

Telephone: (504) 565-8115

Director, Mayor's Office of Urban Development
1515 Poydras Street, Suite 1200
New Orleans, LA 70112

Telephone: (504) 565-6940

OREGON MILL SITES, OREGON

Project Manager, RDI Millsite Conversion
1047 West Lookingglass Road #3
Roseburg, OR 97470

Telephone: (541) 677-9648

RHODE ISLAND BROWNFIELDS PILOT

APPENDIX G
LOCAL CONTACTS FOR BROWNFIELDS PROJECTS

Project Director
Woonasquatucket River Greenway Project
56 Pine Street, Suite 3B
Providence, RI 02903 Telephone: (401)455-8880

STATE OF RHODE ISLAND

State of Rhode Island, Department of Environmental Management
Office of Waste Management
235 Promenade Street
Providence, RI 02908-5767 Telephone: (401)277-2797

TRENTON, NEW JERSEY

City of Trenton, Department of Housing and Development
319 East State Street
Trenton, NJ 08608 Telephone: (609) 989-3509

WEST CENTRAL MUNICIPAL CONFERENCE, ILLINOIS

West Central Municipal Conference
1127 South Mannheim Road, Suite 102
Westchester, IL 60154 Telephone: (708) 450-0100

EPA Regional Brownfields Coordinators

REGION 1: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont

EPA Regional Brownfields Team
U.S. Environmental Protection Agency Region 1
John F. Kennedy Federal Building
One Congress St.
Boston, MA 02203 Telephone: (617) 573-9681

REGION 2: New Jersey, New York, and the territories of Puerto Rico and the U.S. Virgin Islands

EPA Regional Brownfields Team
U.S. Environmental Protection Agency Region 2
290 Broadway, 18th Floor
New York, NY 10007 Telephone: (212) 637-4360

REGION 3: Delaware, Maryland, Pennsylvania, Virginia, West Virginia, and the District of Columbia

EPA Regional Brownfields Team
U.S. Environmental Protection Agency, Region 3
841 Chestnut Building
Philadelphia, PA 19107 Telephone: (215) 566-3001

REGION 4: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee

EPA Regional Brownfields Team
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street
Atlanta, GA 30303 Telephone: (404) 562-8661

REGION 5: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin

APPENDIX G
LOCAL CONTACTS FOR BROWNFIELDS PROJECTS

EPA Regional Brownfields Team
U.S. Environmental Protection Agency, Region 5
Brownfields and Early Action Section
77 West Jackson Boulevard
Chicago, IL 60604 Telephone: (312) 353-3161

REGION 6: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas

EPA Regional Brownfields Team
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202 Telephone: (214) 665-6660

REGION 7: Iowa, Kansas, Missouri, and Nebraska

EPA Regional Brownfields Team
U.S. Environmental Protection Agency, Region 7
726 Minnesota Avenue
Superfund Division
Kansas City, KS 66101 Telephone: (913) 551-7603

REGION 8: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming

EPA Regional Brownfields Team
U.S. Environmental Protection Agency, Region 8
999 18th Street
Suite 500
Denver, CO 80202 Telephone: (303) 312-6931

REGION 9: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa

EPA Regional Brownfields Team
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105 Telephone: (415) 744-2237

REGION 10: Alaska, Idaho, Oregon, and Washington

EPA Regional Brownfields Team
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, WA 98101 Telephone: (206) 553-6523

EPA National Headquarters

U.S. Environmental Protection Agency
Office of Solid Waste and Emergency Response
Outreach and Special Projects Office (5101)
401 M Street SW
Washington, DC 20460 Telephone: (800) 424-9346
(Superfund Hotline)